

CiteSpace 介绍及导用

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0

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2	i学堂-如何运用LaTex排版论文-魏小燕-20200306	厦门大学图书馆 i学堂	2020-03-10
3	i学堂-文献管理软件EndNote X9使用入门-韩		
4	全部14个稿件>		



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联系人：李显辉 (i学堂负责人)

邮箱：shining@xmu.edu.cn



如何开展理工科文献调研

——基于SCI、EI和SciFinder数据库

主讲：韩冬丽

时间：11月16日（周四）19:00

地点：思明校区图书馆总馆321教室

文献管理软件EndNote 21应用入门

主讲：张妮妮

时间：12月7日（周四）19:00

地点：翔安校区德旺图书馆

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让CNKI与WOS成为个人科研选题的好助手

主讲：钟建法

时间：11月23日（周四）19:00

地点：思明校区图书馆总馆321教室

文献分析工具CiteSpace导用

主讲：聂茶庚

时间：12月14日（周四）19:00

地点：翔安校区德旺图书馆

二楼A区信息素养教室

LaTeX论文排版从入门到精通

主讲：魏小燕

入门篇 时间：11月28日（周二）19:00

进阶篇 时间：11月30日（周四）19:00

地点：思明校区图书馆总馆321教室

论文写作这些“雷区”你知道吗？

主讲：张妮妮

时间：12月21日（周四）19:00

地点：翔安校区德旺图书馆

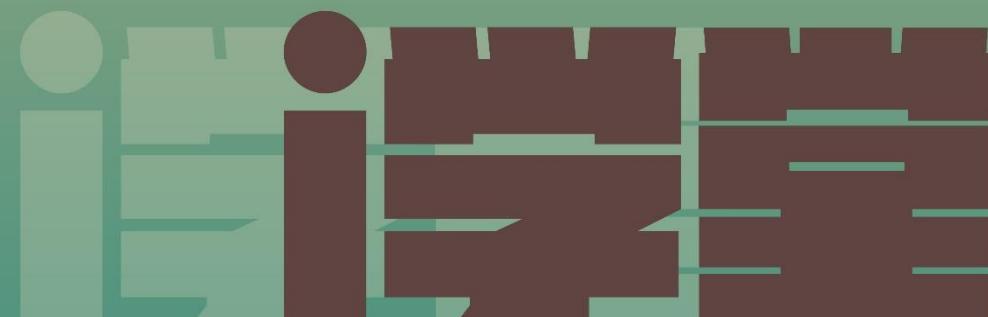
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「二」 CiteSpace理论基础

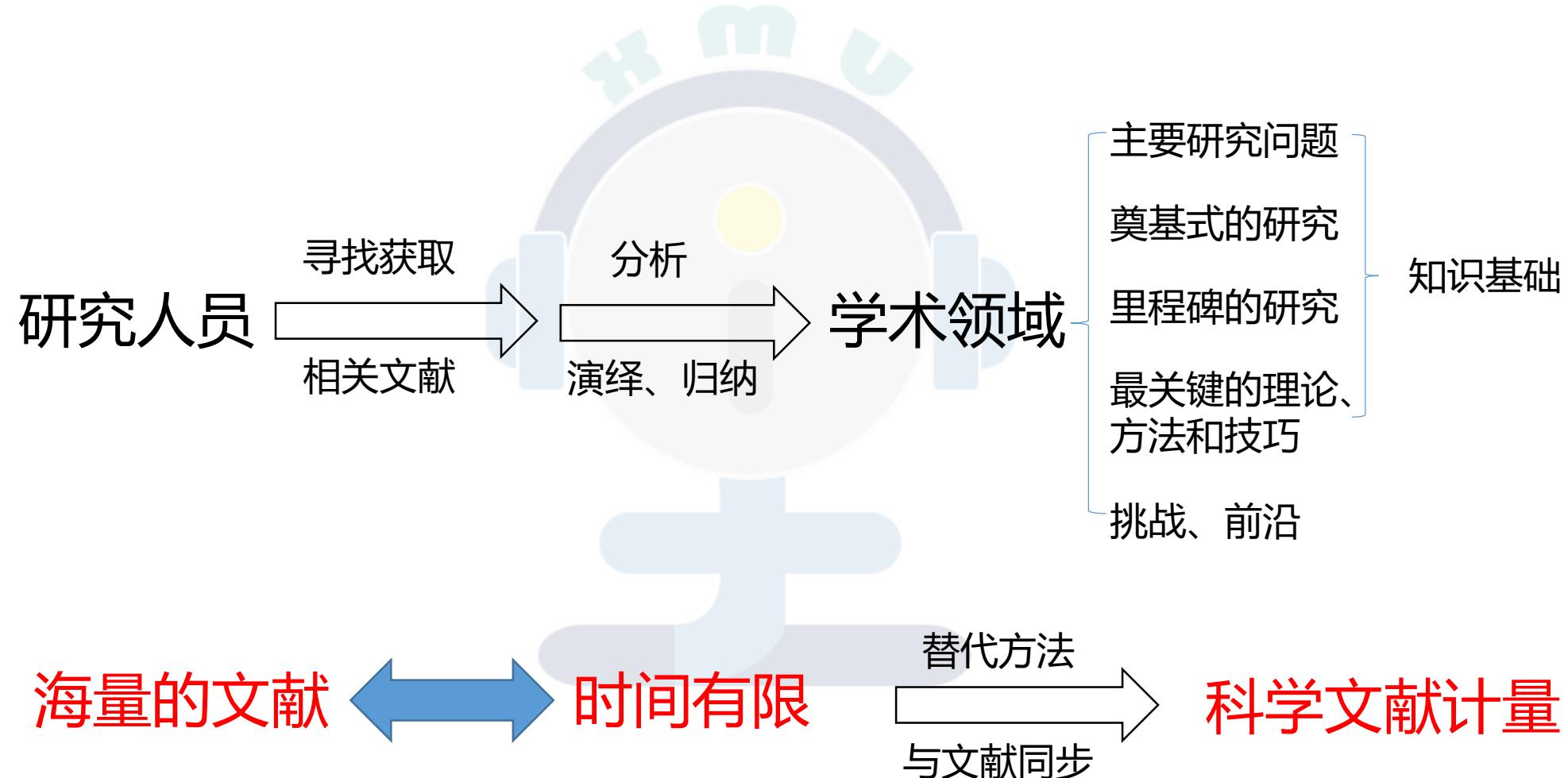
「三」 CiteSpace进行文献分析步骤

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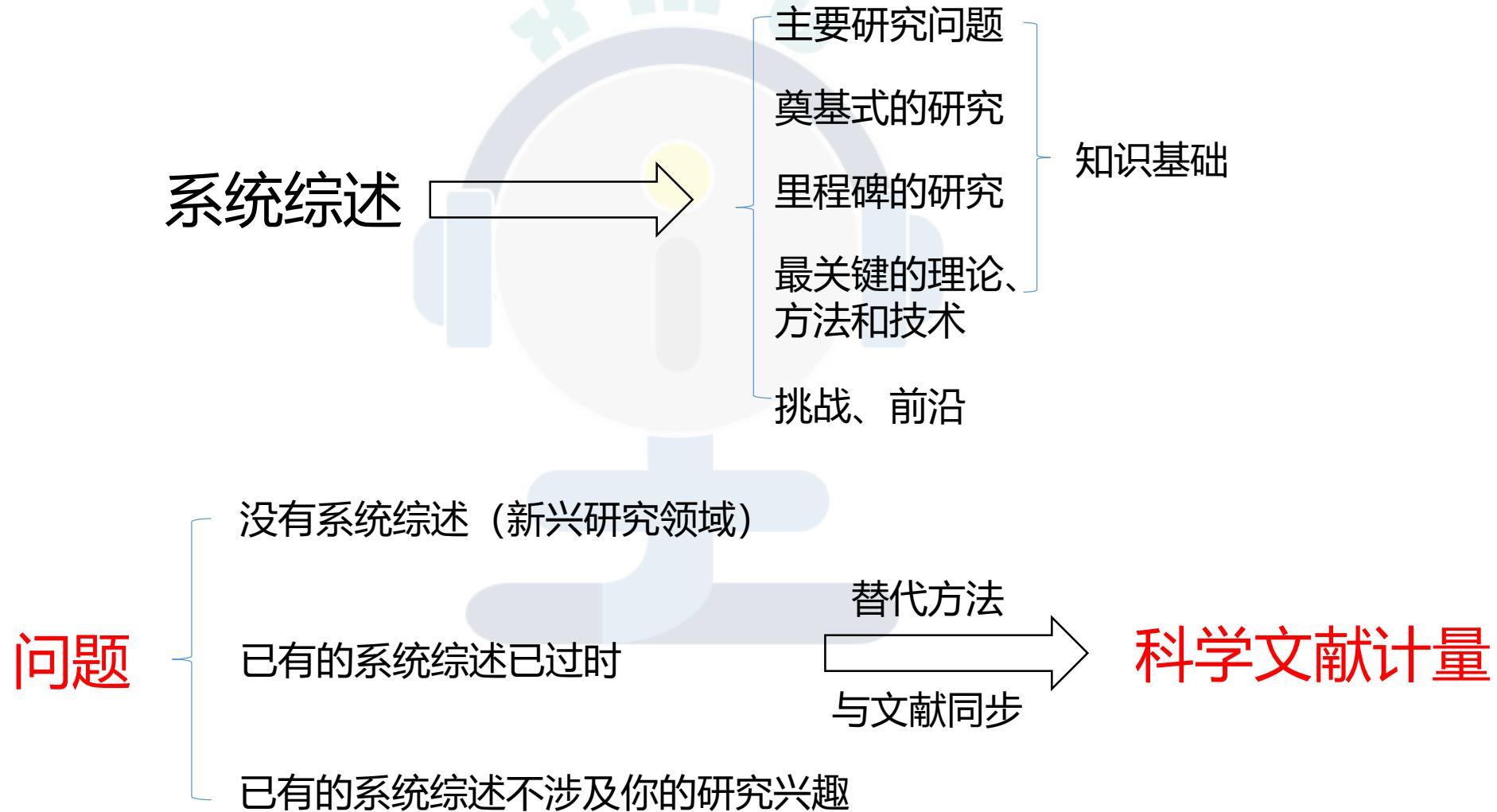


传统的研究模式





传统的研究模式





CiteSpace

1

从大数据的角度归纳现有的
国内外研究文献

2

从时间维度展现学术演变的
动态进程

3

突出核心作者和关键词

4

呈现研究者和机构的发文及
合作的地理空间分布





- 由美国德雷克赛尔大学（费城）信息科学与技术学院（The College of Information Science and Technology, Drexel University）Dr. ChaomMei Chen研究开发

<http://blog.scienccenet.cn/home.php?mod=space&uid=496649>

- 基于JAVA的应用软件



- CiteSpace是近年来信息分析领域最具影响力的信息可视化软件
- 强大的文献共被引分析功能，且随着不断的发展算法，功能不断优化
- 被广泛应用于WoS分类类别的研究领域

使用CiteSpace进行文献研究发表的论文及引用



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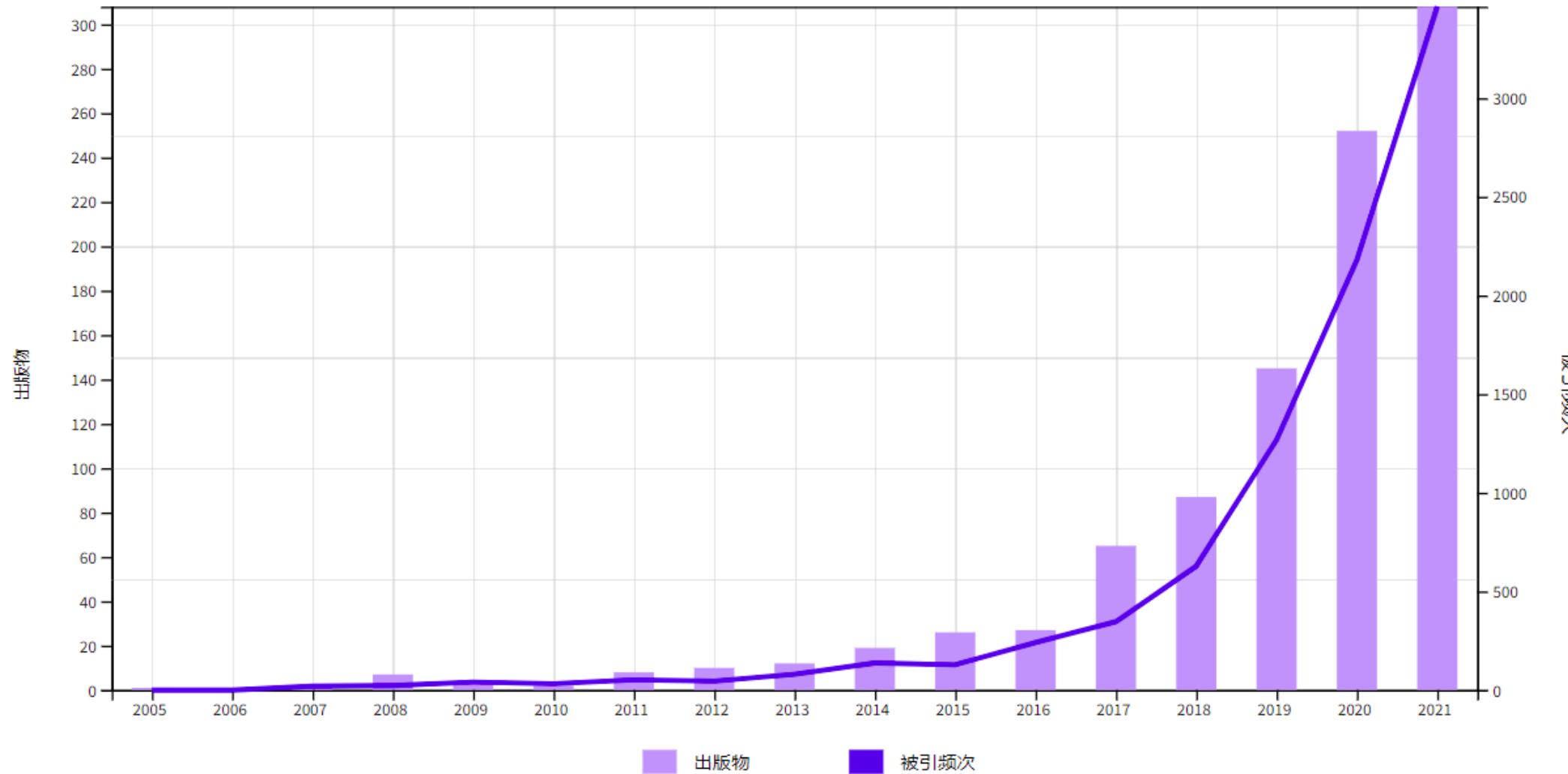
1 How is CiteSpace used and cited in the literature? An analysis of the articles published in English and Chinese core journals

Pan, XL; Cui, M; (...); Hua, WN
16th International Conference on Scientometrics and Informetrics (ISSI)
2017 | 16TH INTERNATIONAL CONFERENCE ON SCIENTOMETRICS & INFORMATICS (ISSI 2017) , pp.158-165 19 参考文献

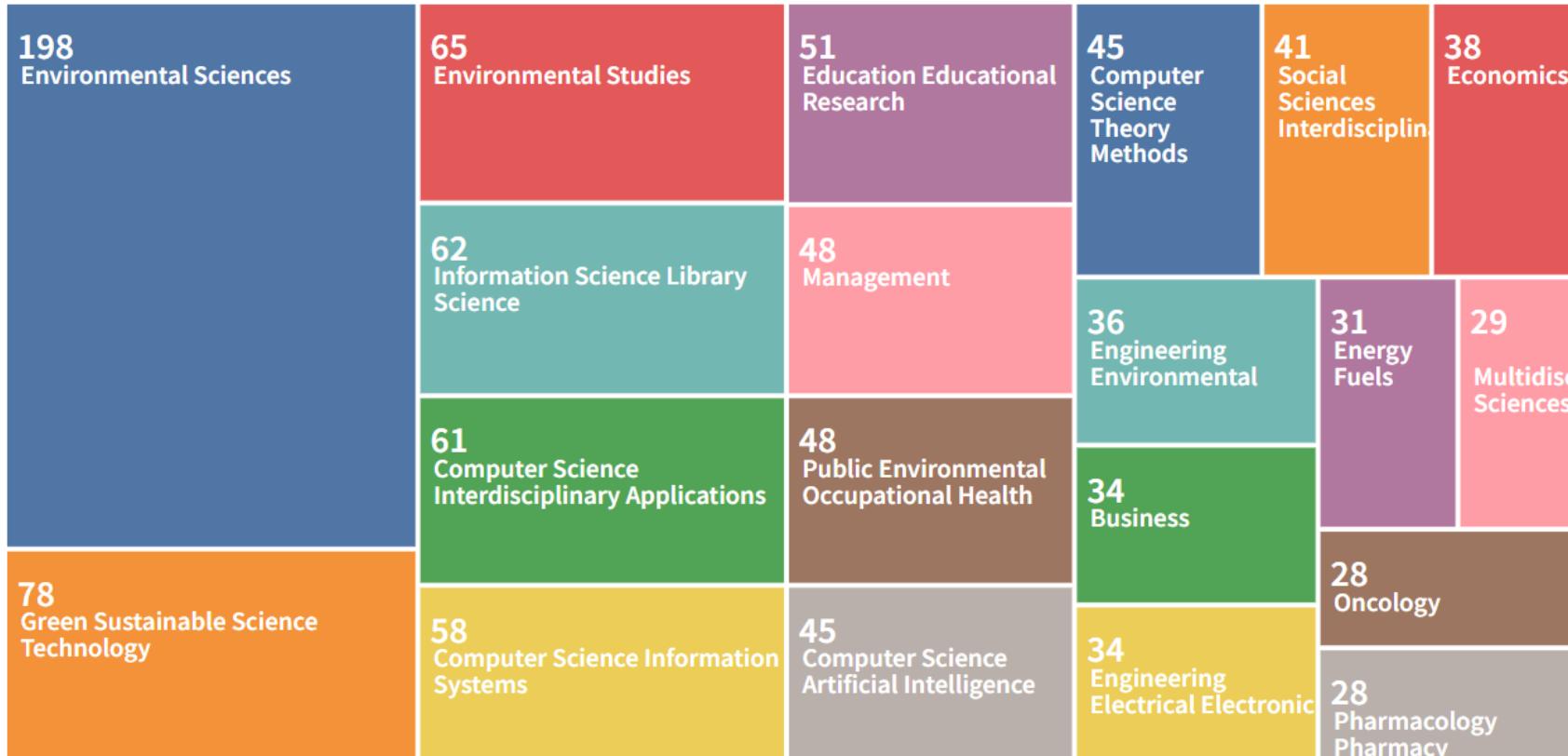
This study investigates the use and citation of CiteSpace, a freely available tool for analysing, detecting and visualizing trends and patterns in scientific literature, by examining how it is used and cited among the articles published in English and Chinese core journals. Results show that CiteSpace is widely used in China along with a substantial uncitedness ... [显示更多](#)

*** 相关记录

使用CiteSpace进行文献研究发表的论文及引用



使用CiteSpace进行文献研究的论文



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CiteSpace的获取与安装



<http://cluster.ischool.drexel.edu/~cchen/citespace/download/>

CiteSpace: Visualizing Patterns and Trends in Scientific Literature
Chaomei Chen

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A small image of the CiteSpace software interface showing a network of nodes and edges.

<https://citespace.podia.com/>

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CiteSpace理论基础

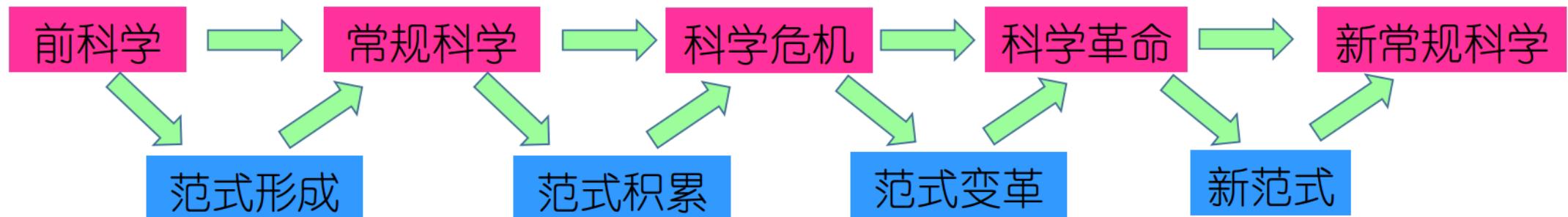




1 库恩的科学革命的范式转换理论

托马斯·库恩认为，科学推进是建立在不断的科学革命过程之中，人们通过科学革命而接纳新观点——新旧科学范式的交替和兴衰。CiteSpace中体现为一个又一个时间段所出现的聚类。

KUHN T S. *The Structure of Scientific Revolutions* [M]. Chicago: University of Chicago Press, 1962.



T.S.Kuhn (1962). 科学革命的结构



2

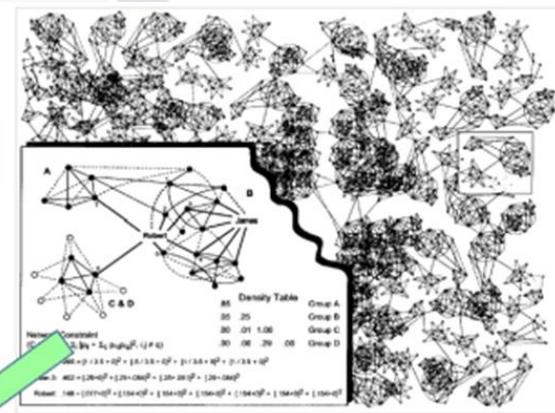
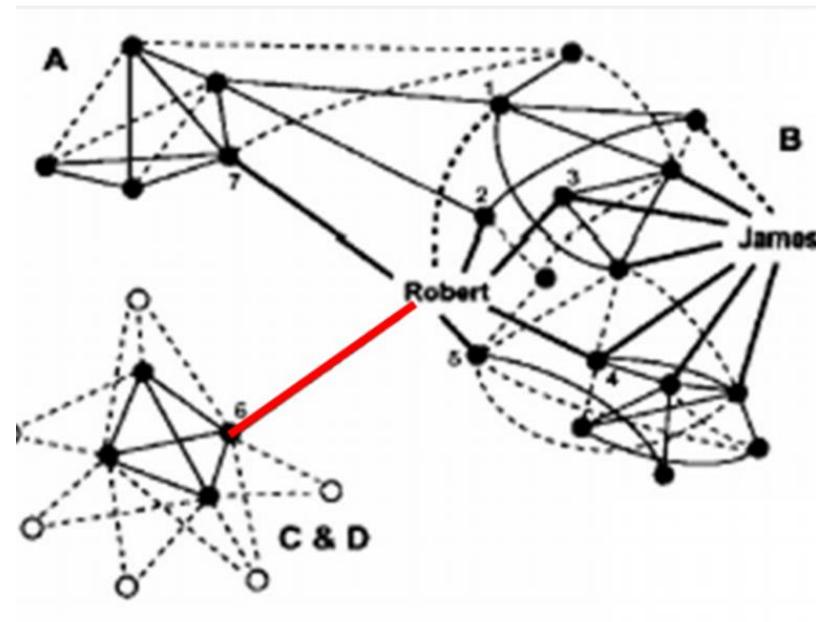
Burt的结构洞理论

芝加哥大学罗纳德·Burt在研究社会网络和社会价值时提出——人们在社会网络中的位置在于他们的意见和创意的质量。CiteSpace中体现为寻找具有高度中介中心性。

BURT R S. Structural holes and good ideas [J]. American Journal of Sociology, 2004, 110(2): 349-99.

BURT R S. Structural Holes: The Social Structure of Competition [M]. Cambridge, Massachusetts: Harvard University Press, 1992.

结构洞(structural holes)



结构洞是“社会网络中的某个或某些个体和有些个体发生直接联系，但与其他个体不发生直接联系，无直接联系或关系间断(disconnection)的现象，从网络整体看好像网络结构中出现了洞穴”。



3 Pirolli提出的最优信息觅食理论

解释信息搜索中人们如何做出决定

PIROLI P. Information Foraging Theory: Adaptive Interaction with Information [M]. Oxford, England: Oxford University Press, 2007.

4 Kleinberg的探测频率突增的算法

一篇论文的引文频次突然呈现急速增长——最合理的解释就是这篇论文切中了学术领域这个复杂系统中的某个关键点

KLEINBERG J. Bursty and hierarchical structure in streams [M]. Proceedings of the 8th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining. Edmonton, Alberta, Canada; ACM Press. 2002: 91-101.

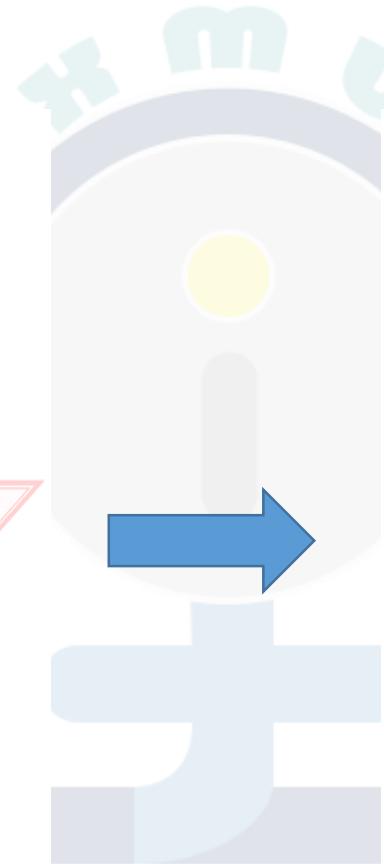
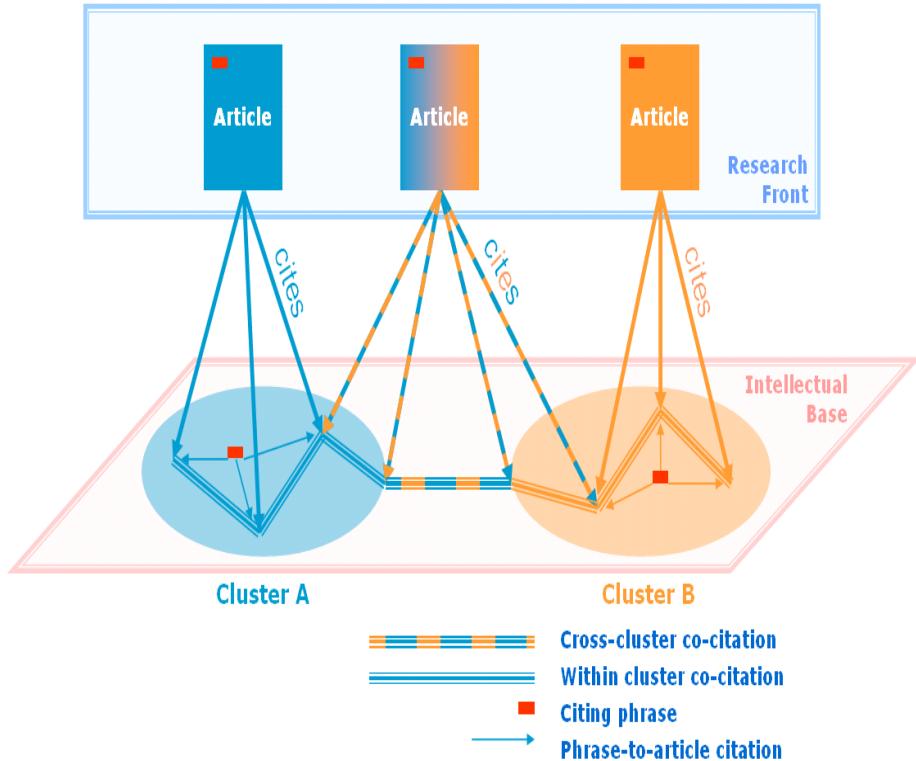
5 结构变异理论

网络的模块化是对其整体结构的一个全局性量度。局部结构的变化可能会引起全局的改变，但是也同样可能不会引起任何全局上的改变。

CHEN C M. Predictive Effects of Structural Variation on Citation Counts [J]. Journal of the American Society for Information Science and Technology, 2012, 63(3): 431-49.

CHEN C. The Fitness of Information: Quantitative Assessments of Critical Evidence [M]. Hoboken, New Jersey, USA: Wiley, 2014.

CiteSpace概念模型



Use key words and search criteria to get focal papers ($A1, A2\dots$) and their reference ($C1, C2\dots$) from database.

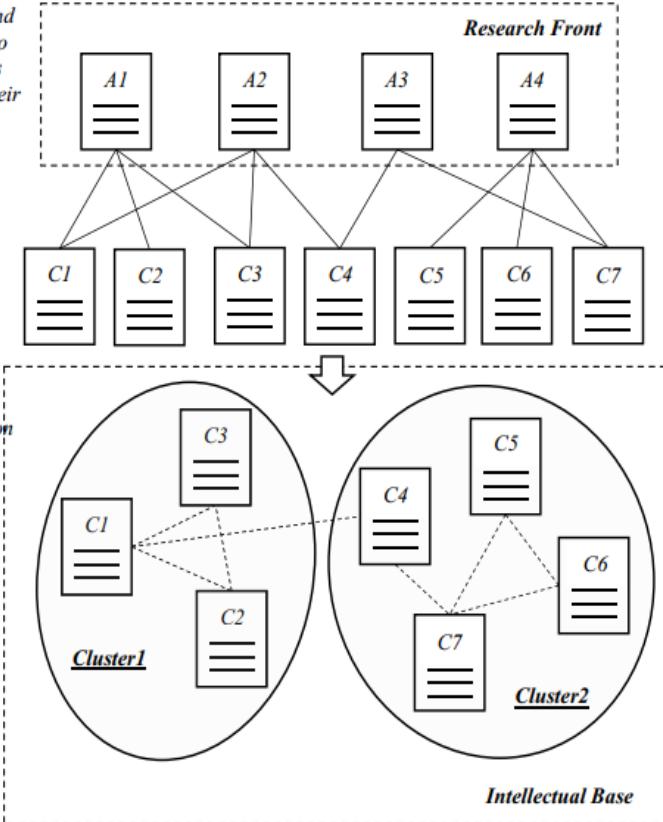
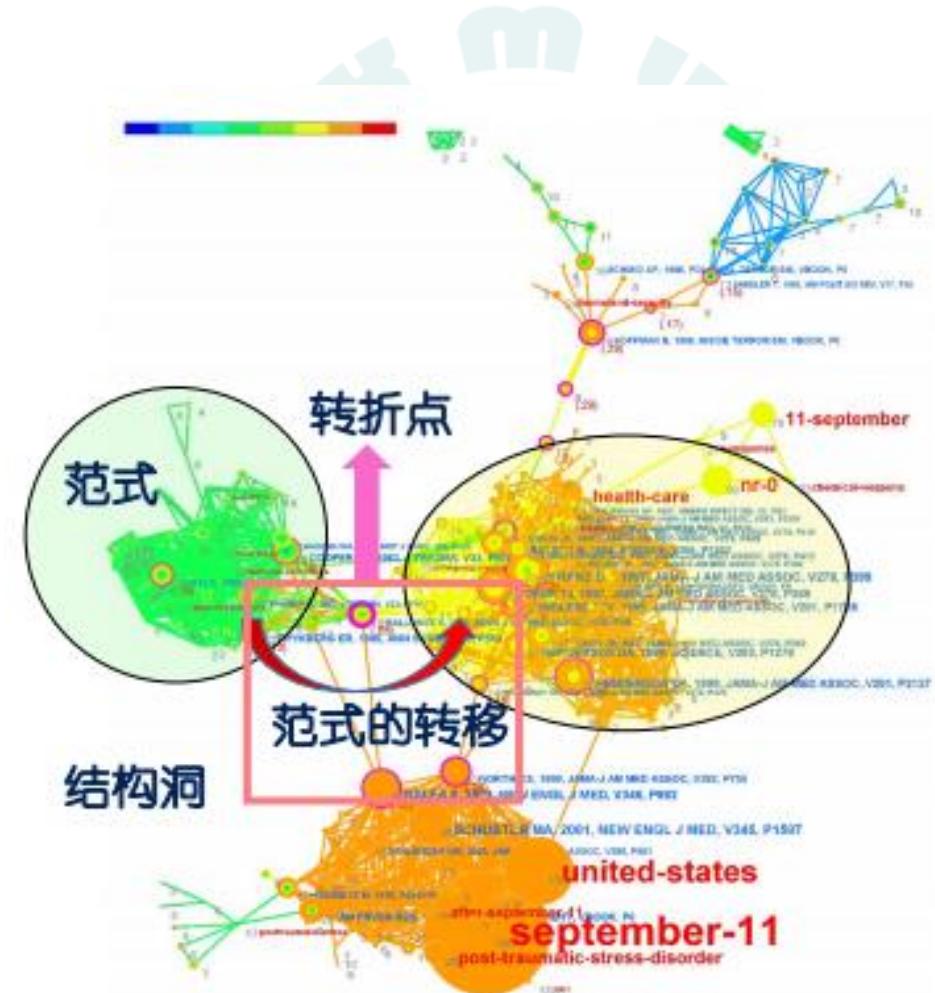


Fig. 1. The conceptual frame work of the co-citation network.

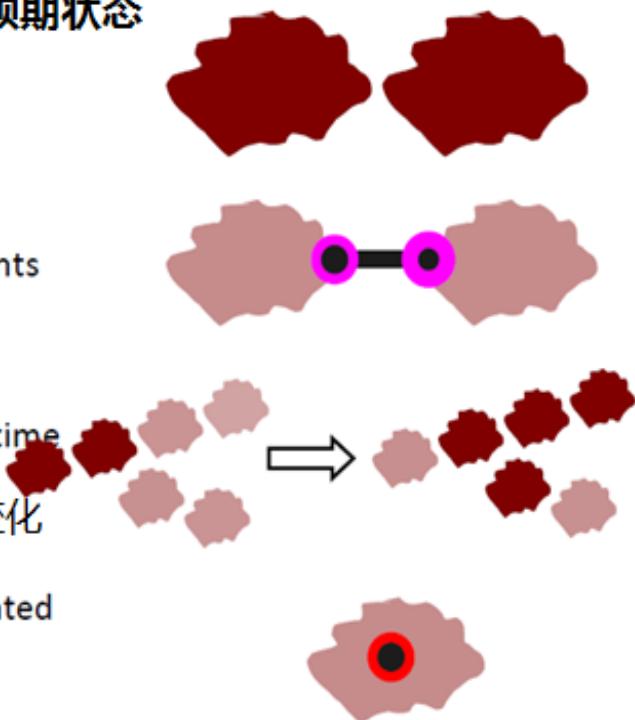


陈超美，绘制

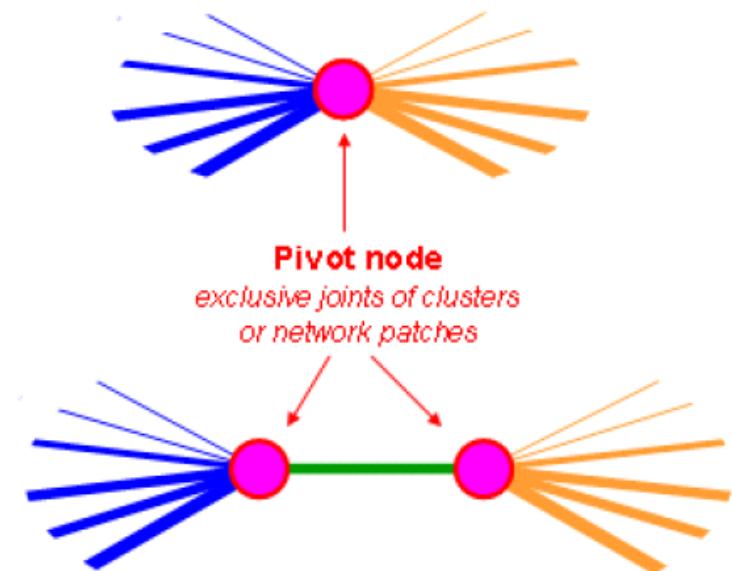
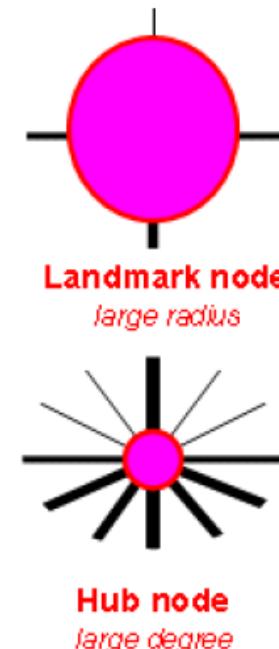


Expected Patterns 预期状态

- Thematic grouping
主题分组
- Intellectual turning points
转折点
- Thematic change over time
主题随着时间的推移变化
- Abrupt changes associated with triggers
触发性的研究突变



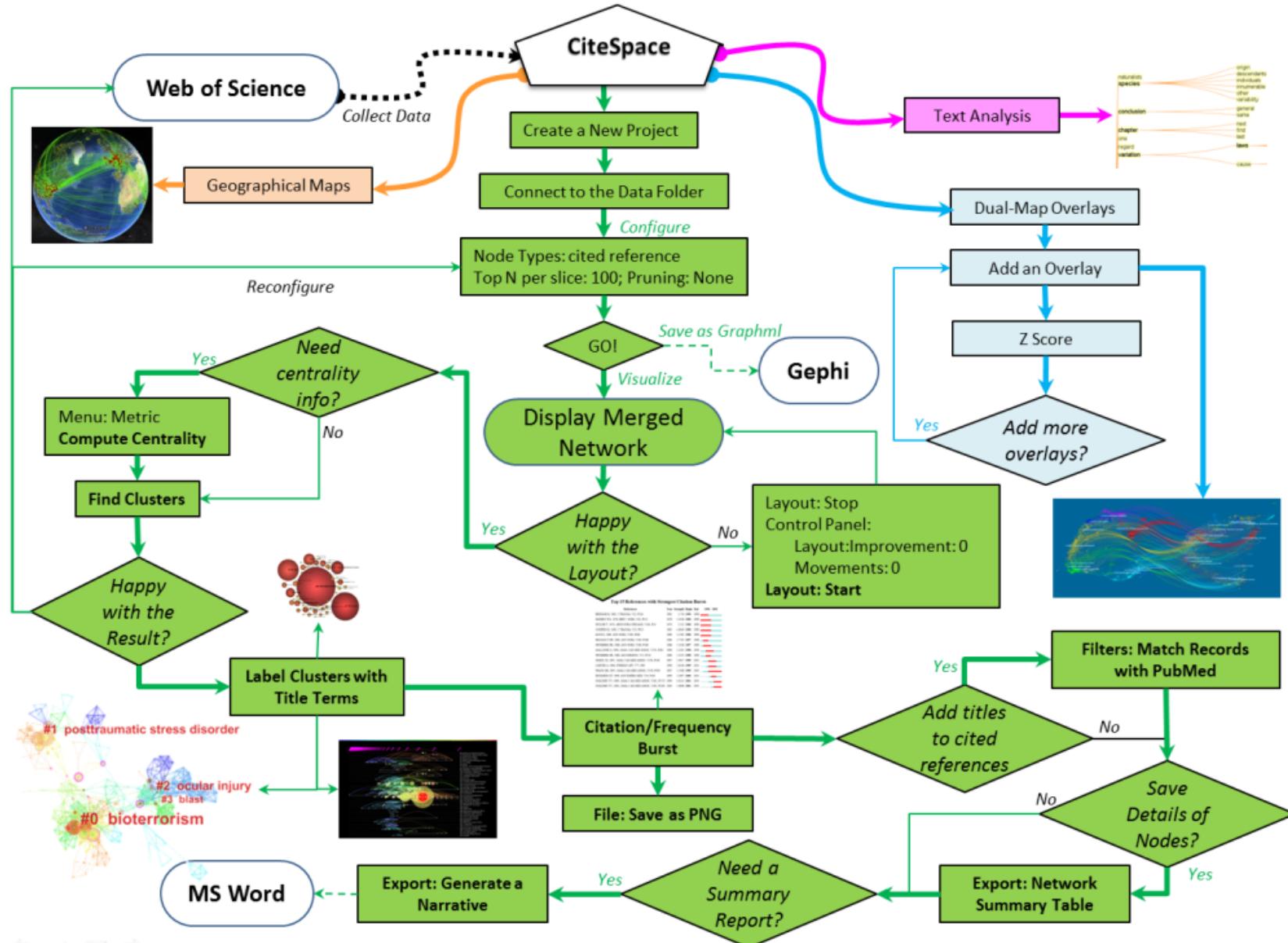
CiteSpace





三 CiteSpace进行文献分析步骤

CiteSpace分析流程





- Web of Science
- CSSCI(Chinese Social Science Citation Index)
- Pubmed
- NSF
- Derwent
- Scopus
- arxiv e-Print
- CNKI
- SDSS([Sloan Digital Sky Survey](#))



各数据库可供分析的功能

功能 数据源	合作网络			共现分析			共被引			文献融合	双图叠加
	作者	机构	国家/地区	关键词	术语	领域	文献	作者	期刊		
Web of Science	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Scopus	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓
Derwent	✓	✗	✗	✓	✓	✓	✓	✓	✓	✗	✗
CNKI	✓	✓	✗	✓	✗	✗	✗	✗	✗	✗	✗
CSSCI	✓	✓	✗	✓	✗	✓	✓	✓	✓	✗	✗
CSCD	✓	✓	✗	✓	✓	✗	✓	✓	✓	✓	✗
RCI	✗	✗	✗	✓	✓	✗	✗	✗	✗	✗	✗

CiteSpace分析的对象——文献题录信息



Author / Co-author		Cited / Co-cited References		
AU Galea, S Ahern, J Resnick, H Kilpatrick, D Bucuvalas, M Gold, J Vlahov, D		BLAZER DG, 1994, AM J PSYCHIAT, V151, P979 EATON L, 2001, NY TIMES 1116, A1 FOTHERGILL A, 1999, DISASTERS, V23, P156 FULLERTON CS, 1999, AVIAT SPACE ENVIR MD, V70, P902 GINEXI EM, 2000, AM J COMMU GOENJIAN AK, 2001, AM J PSY GREEN BL, 1990, J APPL SOC HANSON RF, 1995, J CONSULT HARVEY AG, 1999, J CONSULT KAWACHI I, 2001, J URBAN HEALTH, V78, P458 KESSLER RC, 1995, ARCH GEN PSYCHIAT, V52, P1048 KILPATRICK DG, 1987, CRIME DELINQUENCY, V33, P479 MADAKASIRRA S, 1987, J NERV MENT DIS, V175, P286 MAZURE CM, 2000, AM J PSYCHIAT, V157, P896 NORTH CS, 1999, JAMA-J AM MED ASSOC, V282, P755 ORTEGA AN, 2000, AM J PSYCHIAT, V157, P615 POLE N, 2001, J NERV MENT DIS, V189, P442 RESNICK H, 1999, J ANXIETY DISORD, V13, P359 RESNICK HS, 1993, J CONSULT CLIN PSYCH, V61, P984 ROTHBAUM BO, 1992, J TRAUMA STRESS, V5, P455 RUBONIS AV, 1991, PSYCHOL BULL, V109, P384 RUEF AM, 2000, CULTURAL DIVERSITY E, V6, P235 SHAR B, 1997, SUDAN USER'S MANUAL SHALEV AY, 1998, AM J PSYCHIAT, V155, P630 SHALEV AY, 2000, J CLIN PSYCHIAT SS, V61, P33 SHERBOURNE CD, 1991, SOC SCI MED, V32, P705 SHORE JH, 1989, J NERV MENT DIS, V177, P681 TUCKER P, 2000, J BEHAV HEALTH SER R, V27, P406		
Terms/Noun Phrases		Citation Counts		
AB Background: The scope of the terrorist attacks of September 11, 2001, was unprecedented in the United States. We assessed the prevalence and correlates of acute post-traumatic stress disorder (PTSD) and depression among residents of Manhattan five to eight weeks after the attacks. Methods: We used random-digit dialing to contact a representative sample of adults living south of 110th Street in Manhattan. Participants were asked about demographic characteristics, exposure to the events of September 11, and psychological symptoms after the attacks. Results: Among 1008 adults interviewed, 7.5 percent reported symptoms consistent with current depression (with "current" defined as occurring within the previous 30 days). Among respondents who lived south of Canal Street (i.e., near the World Trade Center), the prevalence of PTSD was 20.0 percent.		NR 32 TC 178 PU MASSACHUSETTS MEDICAL SOC/NEJM PI WALTHAM PA WALTHAM WOODS CENTER, 860 WINTER ST., WALTHAM, MA 02451-1413 USA SN 0028-4793 J9 N ENGL J MED JI N. Engl. J. Med. PD MAR 28 PY 2002 VL 346 IS 13 BP 982 EP 987 PG 6 SC Medicine, General & Internal GA 534UY UT ISI:000174608600006 FP		
Location		Year of Publication		
C1 New York Acad Med, Ctr Urban Epidemiol Studies, New York, NY 10029 USA. Columbia Univ, Mailman Sch Publ Hlth, Dept Epidemiol, New York, NY USA. Med Univ S Carolina, Natl Crime Victims Res & Treatment Ctr, Charleston, SC 29425 USA. Schulman Ronca & Bucuvalas, New York, NY USA. Bellevue Hosp Ctr, New York, NY 10016 USA. RP Galea, S, New York Acad Med, Ctr Urban Epidemiol Studies, Rm 556, 1216 5th Ave, New York, NY 10029 USA. CR 2001, NY TIMES 1226, B2 *AM PSYCH ASS, 1994, DIAGN STAT MENT MENT *DEP HLTH HUMAN SE, 1999, MENT HLTH REP SURG G *US BUR CENS, 2000, STF3A DEP COMM BUR C		VL 346 IS 13 BP 982 EP 987 PG 6 SC Medicine, General & Internal GA 534UY UT ISI:000174608600006 FP		
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co-authorship

AU [Galea, S](#) ——————
[Ahern, J](#)
[Resnick, H](#)
[Kilpatrick, D](#) ——————
[Bucuvalas, M](#)
[Gold, J](#)
[Vlahov, D](#)

TI Psychological sequelae of the [September 11](#) terrorist attacks
in New York City.

SO NEW ENGLAND JOURNAL OF MEDICINE

LA English

DT Article

ID [POSTTRAUMATIC-STRESS-DISORDER](#); NATIONAL COMORBIDITY SURVEY;
MAJOR DEPRESSION; NATURAL DISASTER; SOCIAL SUPPORT; [OKLAHOMA-CITY](#); PREVALENCE; PSYCHOPATHOLOGY; SURVIVORS; SYMPTOMS

AB Background: The scope of the [terrorist attacks](#) of September 11, 2001, was unprecedented in the United States. We assessed the prevalence and correlates of acute [post-traumatic stress disorder](#) (PTSD) and depression among residents of Manhattan five to eight weeks after the attacks. Methods: We used random-digit dialing to contact a representative sample of adults living south of 110th Street in Manhattan. Participants were asked about demographic characteristics, exposure to the events of September 11, and psychological symptoms after the attacks. Results: Among 1008 adults interviewed, 7.5 percent reported symptoms consistent with a diagnosis of current PTSD related to the attacks, and 9.7 percent reported symptoms consistent with current depression (with ``current'' defined as occurring within the previous 30 days). Among respondents who lived south of Canal Street (i.e., near the World Trade Center), the prevalence of PTSD was 20.0 percent.

co-occurring burst terms

CiteSpace分析的对象——文献题录信息



CR 2001, NY TIMES 1226, B2
 *AM PSYCH ASS, 1994, DIAGN STAT MAN MENT
 *DEP HLTH HUMAN SE, 1999, MENT HLTH REP SURG G
 *US BUR CENS, 2000, STF3A DEP COMM BUR C
 BLAZER DG, 1994, AM J PSYCHIAT, V151, P979
 EATON L, 2001, NY TIMES 1116, A1
 FOTHERGILL A, 1999, DISASTERS, V23, P156
 FULLERTON CS, 1999, AVIAT SPACE ENVIR MD, V70, P902
 GINEXI EM, 2000, AM J COMMUN PSYCHOL, V28, P495
 GOENJIAN AK, 2001, AM J PSYCHIAT, V158, P788
GREEN BL, 1990, J APPL SOC PSYCHOL, V20, P1033
 HANSON RF, 1995, J CONSULT CLIN PSYCH, V63, P987
HARVEY AG, 1999, J CONSULT CLIN PSYCH, V67, P985
 KAWACHI I, 2001, J URBAN HEALTH, V78, P458
KESSLER RC, 1995, ARCH GEN PSYCHIAT, V52, P1048
 KILPATRICK DG, 1987, CRIME DELINQUENCY, V33, P479
 MADAKASIRA S, 1987, J NERV MENT DIS, V175, P286
 MAZURE CM, 2000, AM J PSYCHIAT, V157, P896
NORTH CS, 1999, JAMA-J AM MED ASSOC, V282, P755
 ORTEGA AN, 2000, AM J PSYCHIAT, V157, P615
 POLE N, 2001, J NERV MENT DIS, V189, P442
 RESNICK H, 1999, J ANXIETY DISORD, V13, P359
 RESNICK HS, 1993, J CONSULT CLIN PSYCH, V61, P984
 ROTHBAUM BO, 1992, J TRAUMA STRESS, V5, P455
 RUBONIS AV, 1991, PSYCHOL BULL, V109, P384
 RUEF AM, 2000, CULTURAL DIVERSITY E, V6, P235
 SHAH B, 1997, SUDAAN USERS MANUAL
 SHALEV AY, 1998, AM J PSYCHIAT, V155, P630
 SHALEV AY, 2000, J CLIN PSYCHIAT S5, V61, P33
 SHERBOURNE CD, 1991, SOC SCI MED, V32, P705
 SHORE JH, 1989, J NERV MENT DIS, V177, P681
 TUCKER P, 2000, J BEHAV HEALTH SER R, V27, P406



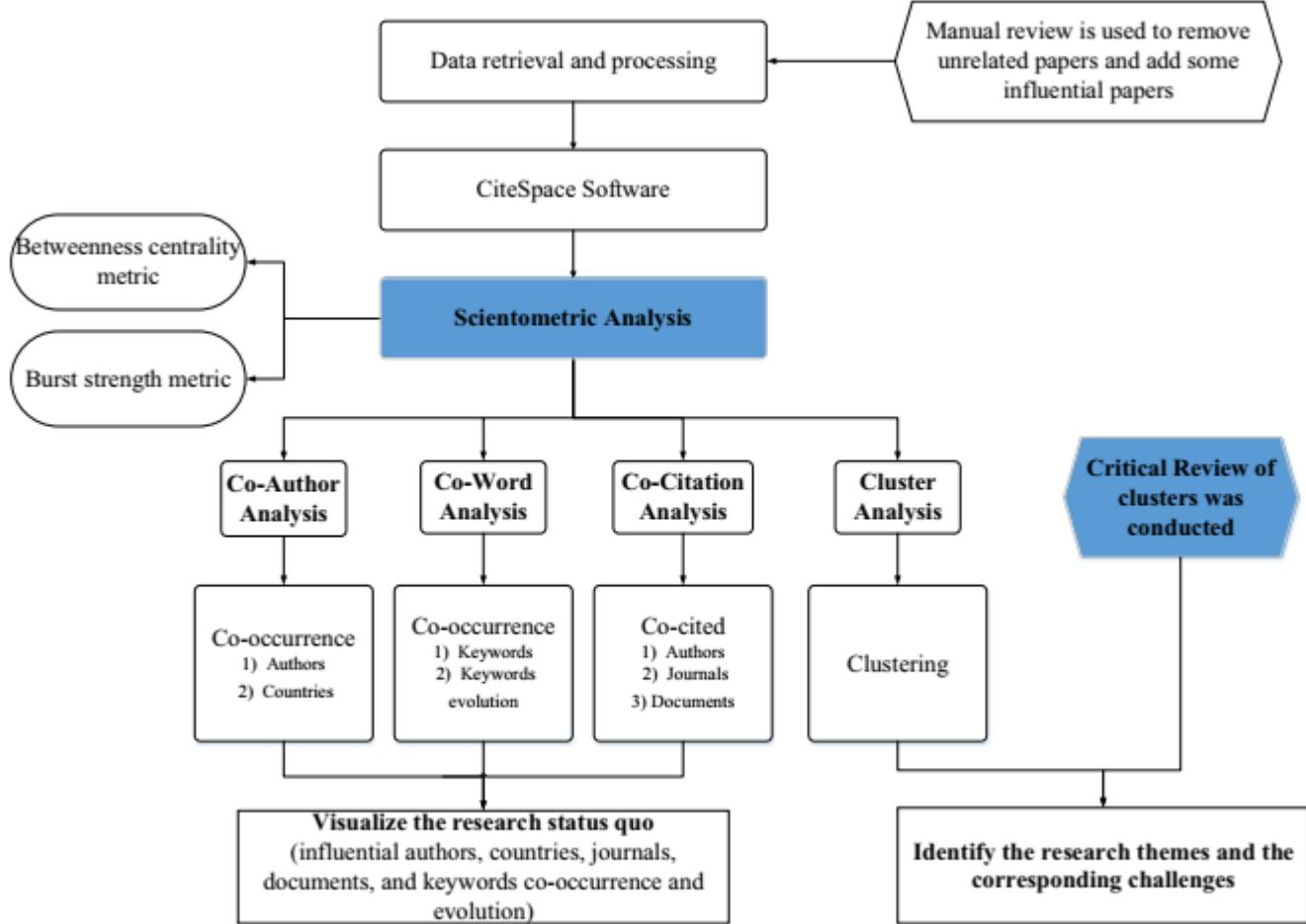
author co-citation

document co-citation

journal co-citation

ACA/DCA/JCA

CiteSpace分析的对象——小结





数据采集

- Web of Science
- CSSCI(Chinese Social Science Citation Index)
- CNKI



无需无止境地优化搜索查询以剔除无关主题的文章，相反，**CiteSpace**可以在聚类过程中区分这些论文。

Chen C. 2018. How to use CiteSpace. Available at <http://leanpub.com/howtousecitespace>.

数据采集及预处理



Web of Science

检索 Web of Science™ 核心合集

基本检索

aerogel*

AND
All document types Article Abstract of Published Item Art Exhibit Review

主题 文献类型 检索

+ 添加另一字段 | 清除所有字段

时间跨度
 所有年份
 从 2006 至 2015
↓

更多设置

Web of Science 核心合集: 引文索引
 Science Citation Index Expanded (SCI-EXPANDED)

检索结果: 5,218 (来自 Web of Science 核心合集)
 检索: 主题: (aerogel*) AND 文献类型: (Article) 更多内容
 创建脚本服务

精炼检索结果
 在如下结果集中检索... 搜索

Web of Science 分类
 MATERIALS SCIENCE MULTIDISCIPLINARY (1,961)
 CHEMISTRY PHYSICAL (1,621)
 CHEMISTRY MULTIDISCIPLINARY (811)
 NANOSCIENCE NANOTECHNOLOGY (683)
 PHYSICS APPLIED (574)
 更多选项/分类... 筛选

文献类型
 ARTICLE (5,218)
 PROCEEDINGS PAPER (361)
 更多选项/分类... 筛选

排序方式: 出版日期 (降序) 第 1 页, 共 522 页

保存至 EndNote online
 保存至 EndNote desktop
 保存至 ResearcherID - 我撰写了这些出版物
 保存到 InCites
 保存为其他文件格式
 其他参考文献软件
 BibTeX
 HTML
 纯文本
 制表符分隔 (Win)
 制表符分隔 (Mac)
 制表符分隔 (Win, UTF-8)
 制表符分隔 (Mac, UTF-8)

发送至文件

记录数: 页面上的所有记录
 记录 1 至 500

记录内容: 全记录与引用的参考文献

文件格式: 纯文本

发送 取消

发送至文件

记录数: 页面上的所有记录
 记录 [] 至 []

记录内容: 作者 标题 来源出版物 摘要
 作者、标题、来源出版物
 作者、标题、来源出版物、摘要
 全记录
 全记录与引用的参考文献

文件格式: 其他参考文献软件
 BibTeX
 HTML
 纯文本
 制表符分隔 (Win)
 制表符分隔 (Mac)
 制表符分隔 (Win, UTF-8)
 制表符分隔 (Mac, UTF-8)





数据去重

数据去重或转换

CiteSpace 4.0 R4 (64-bit) - (c) 2003-2016 Chaomei Chen - Home: C:\Users\library - Subject Categories

File Project Data Network Visualization

Web of Science PubMed

Projects New aero

Project Home: D:\aerogel\fx

Data Directory: D:\aerogel\合并除重

GO! Stop Reset JVM Mem

Space Status

Process Reports

CiteSpace Built-in Database WOS Scopus ADS arXiv CNKI CSSCI Derwent* NSF Project DX

CiteSpace: Data Processing Utilities

Database Project Export Articles Authors References Institutions Query History Help

Project

Project Name [] Count Records [] Select a query here ...

Warning: Queries with * are time consuming. Execute them with the Search button.

Create a New Project

Input Directory []

Text Analysis

Term Extraction from [] # words []

Statistical Association [] Phrase freq > []

WoS → WoS

Filter Records by Percentile Merge WoS Files from Multiple Sub-Folders Remove Duplicates (WoS) WoS (tab) → WoS

WoS → Other Formats

WoS → Direct Citations (.paj) Semantic Predictions→.paj → Direct Citations By Year (.net) → Jigsaw → Carrot2(XML) → SemRep Input

Information

Field Tags Explained Main Path Analysis Procedure Compare Datasets

Note: input filenames must start with 'download'.

SQL Query and Results

SELECT count(*) FROM a

Results of your SQL query

Search Save As WoS Save As CSV Plot SQL Results of [Year, Value]

数据采集及预处理



CSSCI

1. 登录cssci

The screenshot shows the homepage of the Chinese Social Sciences Citation Index (CSSCI). At the top, there is a logo consisting of two red 'S' shapes forming a circle, followed by the text '中文社会科学引文索引' and 'Chinese Social Sciences Citation Index'. Below the logo is a search bar with tabs for '来源文献' (Source Literature) and '被引文献' (Cited Literature), currently set to '来源文献'. The search bar includes fields for '篇名(词)' (Title/Word) and a '高级检索>>' (Advanced Search) button. Below the search bar, there is a section titled '期刊导航' (Journal Navigation) with links to various academic fields. The fields listed are: 法学 (Law), 高校综合性社科学报 (Comprehensive Social Science Journals of Universities), 管理学 (Management), 环境科学 (Environmental Science); 教育学 (Education), 经济学 (Economics), 考古学 (Archaeology), 历史学 (History); 马克思主义 (Marxism), 民族学与文化学 (Ethnology and Cultural Studies), 人文、经济地理 (Humanities, Economic Geography), 社会学 (Sociology); 体育学 (Sports), 统计学 (Statistics), 图书馆、情报与文献学 (Library, Information, and Archives), 外国文学 (Foreign Literature); 心理学 (Psychology), 新闻学与传播学 (Journalism and Communication), 艺术学 (Art), 语言学 (Linguistics); 哲学 (Philosophy), 政治学 (Political Science), 中国文学 (Chinese Literature), 宗教学 (Religious Studies); 综合性社会科学 (General Social Sciences), 中国少数民族语言文字类 (Chinese Ethnic Minorities Language and Literature), 汉语类 (Chinese Language), and 外语类 (Foreign Languages).

期刊导航：◆来源期刊（2014-2015） 扩展版来源期刊（2014-2015） 收录集刊（2014-2015）

法学	高校综合性社科学报	管理学	环境科学
教育学	经济学	考古学	历史学
马克思主义	民族学与文化学	人文、经济地理	社会学
体育学	统计学	图书馆、情报与文献学	外国文学
心理学	新闻学与传播学	艺术学	语言学
哲学	政治学	中国文学	宗教学
综合性社会科学	中国少数民族语言文字类	汉语类	外语类

数据采集及预处理



2、进入检索页面

以《科学学研究》为例，收集其2013-2014年的数据

中文社会科学引文索引
Chinese Social Sciences Citation Index

首页 来源文献检索 被引文献检索 来源期刊导航

科学学研究 期刊名称 精确
与 作者 精确 第一作者
与 期刊名称 精确

发文年代： 从 至
年代卷期： 年 卷 期
文献类型：
学科类别：
学位分类： 一级 二级
基金类别：
每页显示：
排序方式：

数据采集及预处理

3、检索结果



检索条件及精炼结果444条

中文社会科学引文索引
Chinese Social Sciences Citation Index

首页 来源文献检索 来源文献检索结果 被引文献检索 来源期刊导航

检索条件: 期刊名称 = 科学学研究 文献类型 = 论文 年 = 2013 - 2014, 显示数: 444, 结果数: 444, 运行耗时: 0.714秒

二次检索

所有字段 检索

精炼检索

▶ 类型
论文 (444)

▶ 学科
管理学 (275)
哲学 (12)
经济学 (109)
政治学 (2)
法学 (5)
社会学 (1)
图书馆、情报与文献学 (16)
教育学 (7)
统计学 (2)
心理学 (1)
更多选项...

▶ 期刊
科学学研究 (444)

▶ 年代
2014 (217)
2013 (227)

精炼只选择论文

序号	来源作者	来源篇名
□ 1	金贞燕	东亚地区社会科学发展水平比较研究——基于文献被SSCI收录情况的定量分析
□ 2	陈悦 / 刘则渊 / 苏立新	基于互联网的国家/区域“发现—创新”体系的理论构建
□ 3	汪雪峰 / 李兵 / 许幸荣 / 杨帆	基于形态分析法的创新导图构建及应用研究
□ 4	李冲 / 张丽	“洛瑞悖论”与引文分析评价学术的可靠性
□ 5	张晓阳 / 方友亮 / 宋新平	图书引用对学术绩效h指数的影响——以图书情报学领域为例
□ 6	赵莉晓	创新政策评估理论方法研究——基于公共政策评估逻辑框架的视角
□ 7	孙晓华 / 王昀	何种类型的研发投资更有利提高一国生产率？——来自OECD国家的经验证据
□ 8	刘维奇 / 韩巍巍	城镇化、非农技术与农业技术变迁——基于SVAR模型的研究
□ 9	郑佳佳	区际CO ₂ 排放不平等性及与收入差距的关系研究——基于中国省际数据的分析
□ 10	熊磊 / 吴晓波 / 朱培忠 / 陈小玲	技术能力、东道国经验与国际技术许可——境外企业对中国企业技术许可的实证研究
□ 11	吴利华 / 纪静	中美电子信息制造业产业环境比较分析——基于关联产业的视角
□ 12	曾国屏 / 林菲	创业型科研机构初探
□ 13	薛元昊 / 王重鸣	基于组织学习理论的企业知识产权策略研究
□ 14	樊路青 / 刘雯雯	“二元论”视角下的技术获取战略与吸收能力——基于中国经验的实证研究
□ 15	孙永磊 / 党兴华 / 宋晶	网络惯例形成的影响因素探索及实证研究
□ 16	阿儒涵 / 李晓轩	我国政府科技资源配置的问题分析——基于委托代理理论视角



4、选择并下载数据

点击全部选择按钮，cssci一次最多下载100条记录，点击下载，直到下载完所有记录444条

<input checked="" type="checkbox"/> 9	郑佳佳	区域CO ₂ 排放不平等性及与收入差距的关系研究——基于中国省际数据的分析
<input checked="" type="checkbox"/> 10	熊磊 /吴晓波 /朱培忠 /陈小玲	技术能力、东道国经验与国际技术许可——境外企业对中国企业技术许可的实证研究
<input checked="" type="checkbox"/> 11	吴利华 /纪静	中美电子信息制造业产业环境比较分析——基于关联产业的视角
<input checked="" type="checkbox"/> 12	曾国屏 /林菲	创业型科研机构初探
<input checked="" type="checkbox"/> 13	薛元昊 /王重鸣	基于组织学习理论的企业知识产权策略研究
<input checked="" type="checkbox"/> 14	樊路青 /刘雯雯	“二元论”视角下的技术获取战略与吸收能力——基于中国经验的实证研究
<input checked="" type="checkbox"/> 15	孙永磊 /党兴华 /宋晶	网络惯例形成的影响因素探索及实证研究
<input checked="" type="checkbox"/> 16	阿儒涵 /李晓轩	我国政府科技资源配置的问题分析——基于委托代理理论视角
<input checked="" type="checkbox"/> 17	王瑜 /任浩	模块化组织价值创新:内涵与本质
<input checked="" type="checkbox"/> 18	张文红 /赵亚普 /陈爱玲	外部研发机构联系能否提升企业创新？——跨界搜索的中介作用
<input checked="" type="checkbox"/> 19	张爱琴 /侯光明 /李存金	面向工程技术项目的群体创新方法集成研究
<input checked="" type="checkbox"/> 20	王建 /胡珑瑛 /马涛	联盟网络中企业创新平衡模式选择的影响研究——基于网络结构的视角

全部选择 显示 下载 收藏

数据采集及预处理



5、打开所下载的数据文本并另存为UTF-8格式，以download*.txt命名

Screenshot of a Windows desktop showing a Notepad window and a 'Save As' dialog box.

The Notepad window displays two sets of bibliographic data:

Top Set (冯之浚):

- 文件序号: 11G038201401000
- 来源篇名: 发挥市场决定性作用
- 英文篇名: **冯之浚**
- 来源作者: 论文
- 基金: 科学学研究
- 期刊: 国务院
- 第一机构: [冯之浚]国务院
- 机构名称: 学科分类
- 第一作者: 冯之浚
- 中图类号: ***
- 年代卷期: 2014, 32(010):1-
- 关键词: 企业/市场/决定性
- 基金类别: 参考文献

Bottom Set (陈劲):

- 文件序号: 11G038201401000
- 来源篇名: 中关村:未来全球
- 英文篇名: Zhongguancun: f
- 来源作者: 陈劲/吴航/刘文澜
- 文章类型: 论文
- 基金: 国家自然科学基金
- 期刊: 科学学研究
- 第一机构: 清华大学
- 机构名称: [刘文澜]清华大学
- 学科分类: 经济学
- 第一作者: 陈劲
- 中图类号: F124.6
- 年代卷期: 2014, 32(010):5-13
- 关键词: 中关村/创新集群/产业集群/协同创新/创新生态系统
- 基金类别: 国家自科基金/参考文献

The 'Save As' dialog box shows the following settings:

- 文件名(N): downloadLY_20160511215722
- 保存类型(T): 文本文档(*.txt)
- 编码(E): UTF-8
- 按钮: 保存(S) (highlighted), 取消

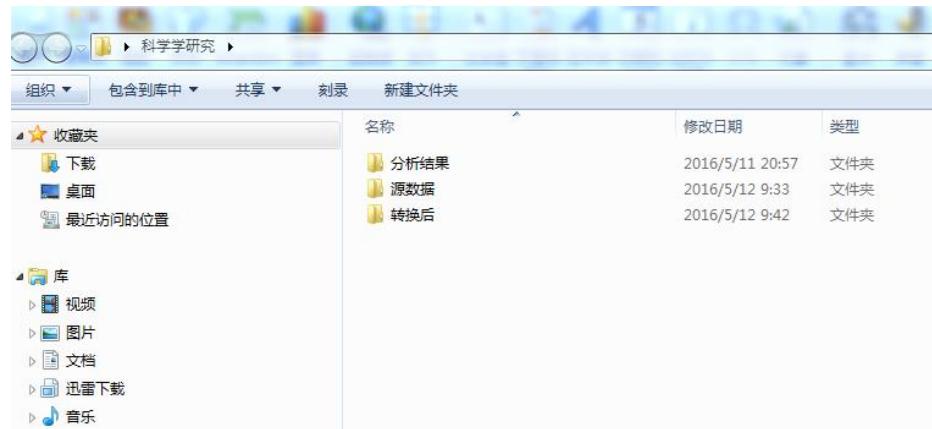
At the bottom left, there is a list of three references:

1. 郑小勇. 创新集群的形成模式及其政策意义探讨. 外国经济与管理. 2010. 30(2)
2. 钟书华. 创新集群:概念、特征及理论意义. 科学学研究. 2008. 26(2)
3. 李北伟. 中国情境下创新集群建设模式探析. 中国软科学. 2012. (11)



6、数据转换

1、为原始数据和转换后
数据分别建立文件夹



2、导入数据

3、选择CSSCI

4、选择原始数据夹和转换后数据夹

5、点击“Format Conversion”
完成转换后会显示“Finished”

Information

Step1: Download data from CSSCI database
Step2: Resave your data with coding utf-8
Step3: Convert your data
This CSSCI converter is contributed by Liu Shengbo, WISELAB, Dalian University of Technology.
Email: liushengbo112@gmail.com



7. 数据转换结果

转换前

EndNote X7 interface showing the '科学研究 > 源数据' folder. The '收藏夹' sidebar lists '下载', '桌面', and '最近访问的位置'. The main pane displays a list of PDF files with names like 'downloadLY_20160511215722' through 'downloadLY_20160512091557'. A large blue arrow points from the '转换前' side to the '转换后' side.

转换后

A Windows File Explorer window titled '科学研究 > 转换后'. The left sidebar shows '收藏夹' with '下载', '桌面', and '最近访问的位置'; '库' with '视频', '图片', '文档', '迅雷下载', and '音乐'; '计算机' with 'WIN7 (C:)', 'DOCUMENT (D:)', 'DATA (E:)', and 'BACKUP (F:)'; and '网络'. The right pane lists numerous PDF files under '名称', all named 'download2013_xxxunique' where xxx ranges from 300 to 322.

名称
download2013_300x1unique
download2013_301x1unique
download2013_302x1unique
download2013_303x1unique
download2013_304x1unique
download2013_305x1unique
download2013_306x1unique
download2013_307x1unique
download2013_308x1unique
download2013_309x1unique
download2013_310x1unique
download2013_311x1unique
download2013_312x1unique
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download2013_314x1unique
download2013_315x1unique
download2013_316x1unique
download2013_317x1unique
download2013_318x1unique
download2013_319x1unique
download2013_320x1unique
download2013_321x1unique
download2013_322x1unique

数据采集及预处理



CNKI

1、登录CNKI → 2、进入期刊检索页面

以《科学学研究》为例，收集其**2013-2014**年的数据

序号	篇名	作者	刊名	年/期	被引	下载	预览	分享
1	公众参与创新的社会网络:创客运动与创客空间	徐思彦; 李正风	科学学研究	2014/12	14			
2	协同创新效应运行机理研究:一个都市圈视角	解学梅	科学学研究	2013/12	24			
3	研发投入强度对企业绩效影响的门槛效应研究	戴小勇; 成为力	科学学研究	2013/11	23			

需要注意的是**CNKI**没有文献类型的分类，而检索的结果中**新闻、会议通知等信息需要在数据收集时删除**。因此需要进行手工删除，建议可以在下载时逐页检查。



3、导出数据

检索 高级检索 专业检索 作者发文检索 科研基金检索 句子检索 来源期刊检索

来源类别: 全部期刊 SCI来源期刊 EI来源期刊 核心期刊 CSSCI
 来源期刊: 科学学研究 精确

期刊年期: 从 2013 年 到 2014 年 指定期: 请输入 结果中检索

分组浏览: 学科 发表年度 基金 研究层次 作者 机构 免费订阅 定制检索式

2014(242) 2013(2)

排序: 主题排序 发表时间 被引 下载 切换到摘要 每页显示: 10 20 50

筛选出433篇 找到 489 条结果 浏览 1/10

	篇名	作者	刊名	年/期	被引	下载	预览	分享
<input type="checkbox"/>	创新3.0与创新生态系统	李万;常静;王敏杰;朱学彦;金爱民	科学学研究	2014/12	12	1571		
<input checked="" type="checkbox"/>	创新生态系统:源起、知识演进和理论框架	梅亮;陈劲;刘洋	科学学研究	2014/12	6	2066		
<input checked="" type="checkbox"/>	多重视角下的创新生态系统	赵放;曾国屏	科学学研究	2014/12	4	1118		
<input checked="" type="checkbox"/>	公众参与创新的社会网络:创客运动与创客空间	徐思彦;李正风	科学学研究	2014/12	25	4017		
<input checked="" type="checkbox"/>	风险技术公众态度形成中的社会心理因素——以转基因水稻为例	李慧;梁娟娟;王振辉	科学学研究	2014/12		270		
<input checked="" type="checkbox"/>	国家自然科学基金花落谁家?	杨勇;赵驰	科学学研究	2014/12	2	208		

数据采集及预处理



选择所有筛选出的433篇文献，再点击“导出/参考文献”，进入文献输入界面，此时需要选择输入数据的类型。

使用CiteSpace进行分析的文献类型输入为“Refworks”。建议输入“Refworks”和“Endnote”两种格式。前者可以进行文献可视化分析，而后者可以用于进行论文写作时使用。

	题名	(第一)作者/主编	来源	发表时间	数据库	删除
<input checked="" type="checkbox"/>	公众参与创新的社会网络·创客运动与创客空间	徐思彦;李正风 科学学研究		2014-12-15	期刊	X
<input checked="" type="checkbox"/>	协同创新效应运行机理研究:一个都市圈视角	解学梅 科学学研究		2013-12-15	期刊	X
<input checked="" type="checkbox"/>	研发投入强度对企业绩效影响的门槛效应	CAJ-CD格式引文 ②				
<input checked="" type="checkbox"/>	创新3.0与创新生态系统	查新(引文格式) ②				
<input checked="" type="checkbox"/>	后发者如何实现快速追赶?——一个二次商 术创新的共演模型	查新(自定义引文格式) ②				
<input checked="" type="checkbox"/>	创新生态系统:源起、知识演进和理论框架	CNKI E-Study ②	下载软件			
<input checked="" type="checkbox"/>	创业学习的内涵、维度及其测量	CNKI桌面版个人数字图书馆 ②	下载软件			
<input checked="" type="checkbox"/>	多重视角下的创新生态系统	Refworks ②				
<input checked="" type="checkbox"/>	中国企业专利实施和产业化问题研究	EndNote ②				
<input checked="" type="checkbox"/>	创业自我效能感、创业资源与农民创业动 机	NoteExpress ②				
<input checked="" type="checkbox"/>	组织激励、组织文化对知识共享的作用机 制及社会影响理论	NoteFirst ②				
<input checked="" type="checkbox"/>	技术联盟知识转移有效性的差异来源研究- 战略柔性的视角	自定义(支持需输出更多文献 信息的查新等用途) ②				
<input checked="" type="checkbox"/>	社会资本促进了组织创新吗?——一项基于 企业家资源、动态能力和企业创业期的绩 效科技企业的对比研究					
<input checked="" type="checkbox"/>	产业技术创新联盟内部风险管理研究—— 折中策略在技术创新中的应用					

条件: 中英文刊名=科学学研究 or ISSN = 科学学研究 or CN = 科学学研究 and 年 between 2013,2014 (精确匹配)

上方工具栏: 全部清除 导出 / 参考文献 定制 生成检索报告

右侧操作栏: 复制到剪贴板 打印 导出 xls doc 定制到个人机构馆

右侧文献列表:

- [1] 李万,常静,王敏杰,朱学彦,金爱民. 创新3.0与创新生态系统[J]. 科学学研究,2014,12:1761-1770.
- [2] 梅亮,陈劲,刘洋. 创新生态系统:源起、知识演进和理论框架[J]. 科学学研究,2014,12:1771-1780.
- [3] 赵放,曾国屏. 多重视角下的创新生态系统[J]. 科学学研究,2014,12:1781-1788+1796.
- [4] 徐思彦,李正风. 公众参与创新的社会网络·创客运动与创客空间[J]. 科学学研究,2014,12:1789-1796.
- [5] 李慧,梁娟娟,王振辉. 风险技术公众态度形成中的社会心理因素——以转基因水稻为例[J]. 科学学研究,2014,12:1797-1803+1810.
- [6] 杨勇,赵驰. 国家自然科学基金花落谁家?[J]. 科学学研究,2014,12:1804-1810.
- [7] 刘志迎,毕盛,谭敏. 基于SD中国技术转移系统演化的动态模型研究[J]. 科学学研究,2014,12:1811-1819.
- [8] 杨龙志,刘霞. 区域间技术转移存在“马太效应”吗?——省际技术转移的驱动机制研究[J]. 科学学研究,2014,12:1820-1827+1858.
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- [10] 陈德智,刘辉. 是高效率还是低成本?——华为追赶爱立信[J]. 科学学研究,2014,12:1836-1845.
- [11] 代中强. 知识产权保护提高了出口技术复杂度吗?——来自中国省际层面的经验研究[J]. 科学学研究,2014,12:1846-1858.
- [12] 张军荣,袁晓东. 中国“拜杜规则”促进高校专利产出了吗?[J]. 科学学研究,2014,12:1859-1866+1887.
- [13] 单标安,蔡莉,鲁喜凤,刘利. 创业学习的内涵、维度及其测量[J]. 科学学研究,2014,12:1867-1875.

数据采集及预处理



点击“导出”下载数据。CNKI可以一次下载500条数据

[CAJ-CD格式引文](#)

[查新（引文格式）](#)

[查新（自定义引文格式）](#)

[CNKI E-Study](#)

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[Refworks](#)

[EndNote](#)

[NoteExpress](#)

[NoteFirst](#)

[自定义（支持需输出更多文献信息的查新等用途）](#)



复制到剪贴板
打印
导出

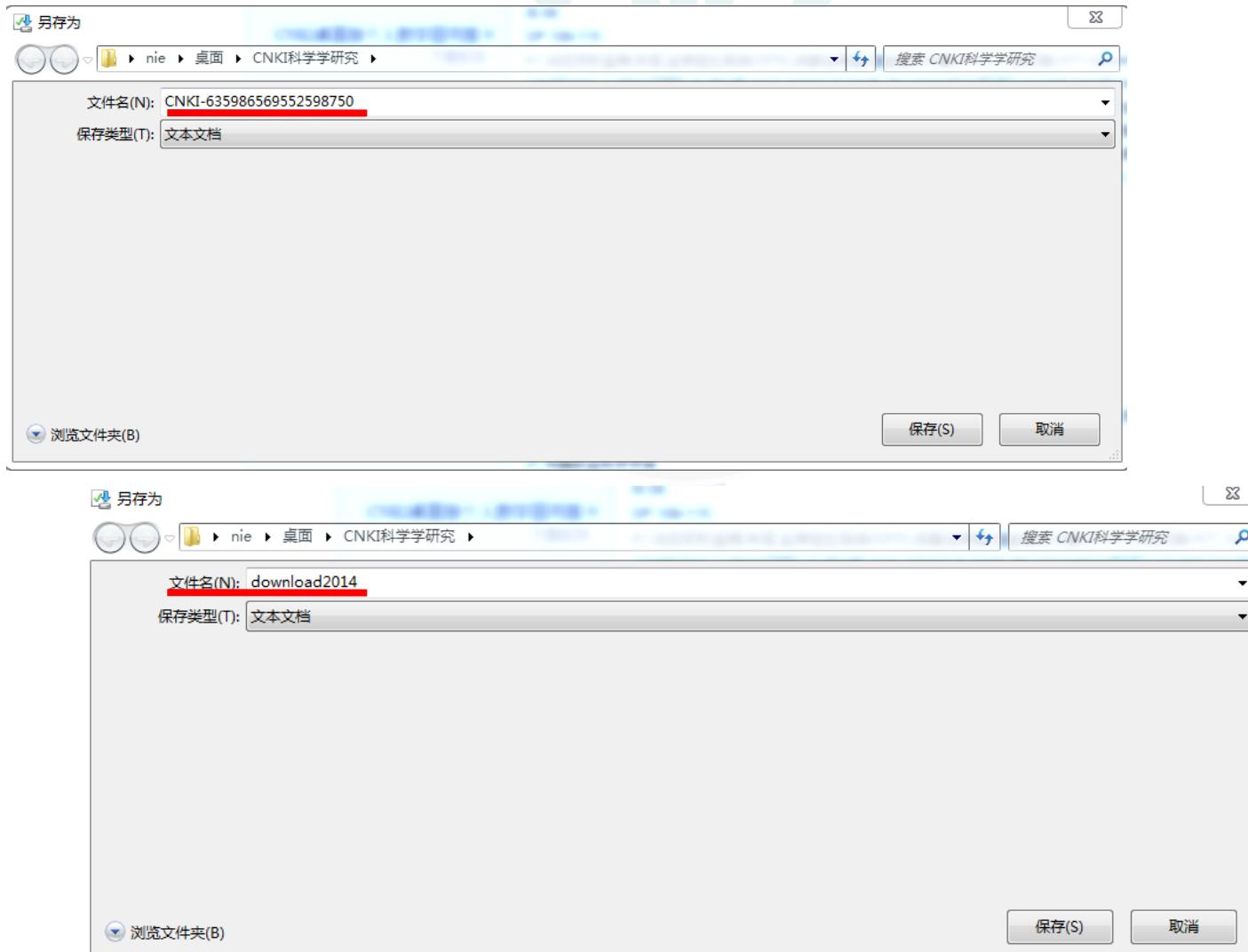
RT Journal Article
SR 1
A1 李万;常静;王敏杰;朱学彦;金爱民;
AD 上海市科学学研究所;
T1 创新3.0与创新生态系统
JF 科学学研究
YR 2014
IS 12
OP 1761-1770
K1 创新3.0;创新生态系统;第三代创新政策 innovation 3.0;innovation ecosystems;the third generation of innovation policy
AB 从创新理论发展演变、企业创新模式3.0兴起、第三代创新政策实践等多重视角,系统梳理了近年来创新3.0范式演变的理论基础与实践探索,认为其实质是以创新生态系统为核心特征的新一代创新范式。在分析创新生态系统兴起和发展动因的基础上,深入阐释了创新生态系统的概念与特征。并提出在我国创新驱动发展战略下,建设世界顶级创新生态系统的基本考虑。
SN 1003-2053
CN 11-1805/G3
LA 中文;
DS CNKI

RT Journal Article
SR 1
A1 梅亮;陈劲;刘洋;
AD 浙江大学公共管理学院;清华大学经济管理学院;华南理工大学工商管理学院;
T1 创新生态系统源起、知识演进和理论框架
JF 科学学研究
YR 2014
IS 12
OP 1771-1780
K1 创新生态系统;知识图谱;共生演化;科学计量 innovation ecosystem;knowledge mapping;coevolution;scientific metrology
AB 创新驱动发展的背景下,企业竞争优势的提升越来越依赖其所处的创新生态系统。作为市场与组织的中间层次,生态系统视角成为创新理论研究范式的新方向。现有的研究缺乏对于创新生态系统理论及其研究演进的系统性回顾。本文以科学计量方法为基础,系统论述了创新生态系统理论的源起、知识演进和理论框架。研究结论显示:创新生态系统的理论研究主要围绕商业生态系统,价值创造,开放式创新,创新生态系统四大聚类展开。基于重点文献对创新生态系统理论知识演进的分析,创新生态系统的理论框架可分为核心文献、理论基础、研究方法三大层次。
SN 1003-2053
CN 11-1805/G3
LA 中文;

数据采集及预处理



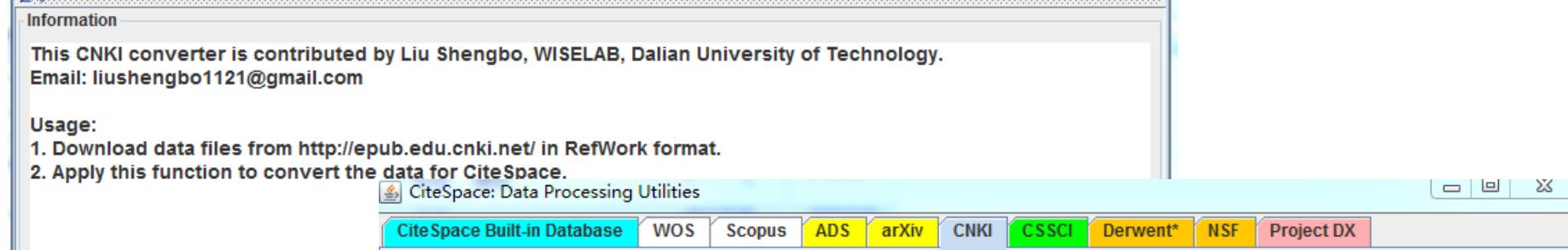
4、保存数据以download*.txt命名



数据采集及预处理



5、数据转换



转换完成后的数据
即可用于CiteSpace



转换完成



运行CiteSpace

CiteSpace: Welcome!

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CiteSpace 6.2.R3 (Advanced) available; GPT-defined cluster labels and between-cluster labels ([Demo Video](#))
[Design and Analytic Principles of CiteSpace](#)
Upgrade to CiteSpace (Advanced): 1 Year; 2 Years
 升级高级版 (微信/支付宝) : 1年; 2年
 Basic版可以免费从 citespace.podia.com 获取。任何其它网站均未经授权。
 Warning: The citespace.podia.com is the official website of CiteSpace. CiteSpace distributed on any other websites are unauthorized.

System Information

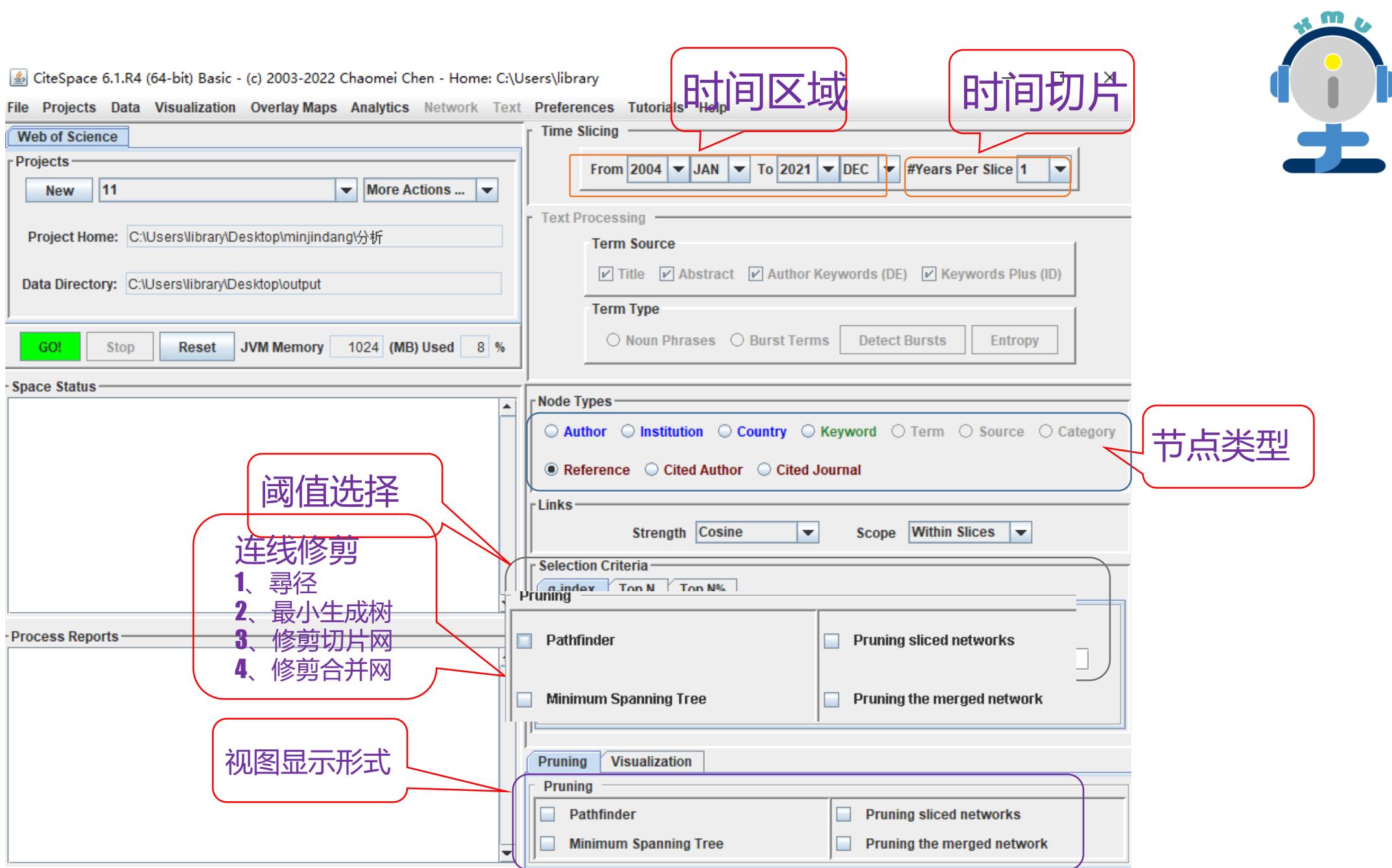
CiteSpace 6.2.R2 (64-bit) Basic	Windows 11 (CN/zh)	Java 17.0.2+8-LTS-86 (64-bit)
Built: March 24, 2023	Processors: 12	Java HotSpot(TM) 64-Bit Server VM
Expire: December 31, 2024	Host: XA-05 59.77.41.150	Java Home: C:\Program Files\CiteSpace\runtime

Key Publications

- Chen, C. (2020) [A Glimpse of the First Eight Months of the COVID-19 Literature on Microsoft Academic Graph](#). Front. Res. Metr. Anal. 5:607286.
- Chen, C., Song, M. (2019) [Visualizing a field of research: A methodology of systematic scientometric reviews](#). PLoS ONE, 14(10):e0223994.
- Chen, C. (2017) [Science mapping: A systematic review of the literature](#). JDIS, 2(2), 1-40.
- Chen, C. (2016) [CiteSpace: A Practical Guide for Mapping Scientific Literature](#). Nova Science Publishers.
- Chen, C. et al. (2010) [The structure and dynamics of co-citation clusters: A multiple-perspective co-citation analysis](#). JASIST, 61(7), 1386-1409.
- Chen, C. (2006) [CiteSpace II: Detecting and visualizing emerging trends and transient patterns in scientific literature](#). JASIST, 57(3), 359-377.
- Chen, C. (2004) [Searching for intellectual turning points: Progressive Knowledge Domain Visualization](#). Proc. Nat. Acad. Sci., 101(Suppl.), 5303-5310.

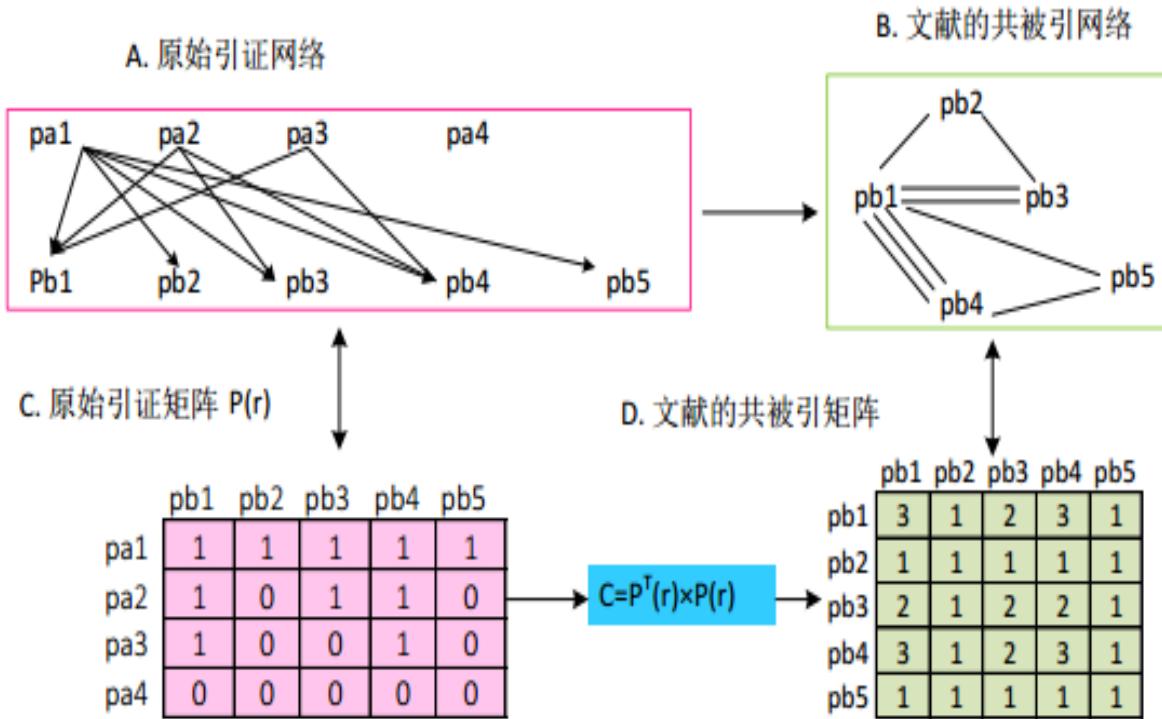
This version of CiteSpace is for personal use only. Use it at your own risk.

[English](#) [Agree](#) [Disagree](#)



The image shows the CiteSpace 6.1.R4 software interface with several features highlighted by red boxes:

- 时间区域 (Time Area):** A red box highlights the "Time Slicing" section at the top right, which includes fields for "From" (2004), "To" (2021), "Text Processing" (JAN, DEC), and "#Years Per Slice" (1).
- 时间切片 (Time Slice):** A red box highlights the "Time Slicing" section at the top right.
- 节点类型 (Node Type):** A red box highlights the "Node Types" section, which includes radio buttons for Author, Institution, Country, Keyword, Term, Source, Category, Reference, Cited Author, and Cited Journal. The "Reference" option is selected.
- 阈值选择 (Threshold Selection):** A red box highlights the "Pruning" section, which includes dropdown menus for "Strength" (Cosine) and "Scope" (Within Slices). It also includes tabs for "Selection Criteria" (n-index, Top N, Top N%) and "Pruning" (Pathfinder, Minimum Spanning Tree).
- 连线修剪 (Line Pruning):** A red box highlights the "Pruning" section, listing four methods: Pathfinder, Minimum Spanning Tree, Pruning sliced networks, and Pruning the merged network.
- 1、尋徑 (1, Pathfinding):** A red box highlights the "Pruning" section under the "Selection Criteria" tab.
- 2、最小生成树 (2, Minimum Spanning Tree):** A red box highlights the "Pruning" section under the "Selection Criteria" tab.
- 3、修剪切片网 (3, Pruning sliced networks):** A red box highlights the "Pruning" section under the "Pruning" tab.
- 4、修剪合并网 (4, Pruning the merged network):** A red box highlights the "Pruning" section under the "Pruning" tab.
- 视图显示形式 (View Display Format):** A red box highlights the "Visualization" tab in the "Pruning" section.



文献共被引分析

van Raan A F J. Advances in bibliometric analysis: Research performance assessment and science mapping[J]. *Bibliometrics. Use and Abuse in the Review of Research Performance*, 2014: 17-28.



CiteSpace 6.1.R4 (64-bit) Basic - (c) 2003-2022 Chaomei Chen - Home: C:\Users\library

File Projects Data Visualization Overlay Maps Analytics Network Text Preferences Tutorials Help

Web of Science

Projects

New 11 New Project

Time Slicing
From 2004 JAN To 2021 DEC #Years Per Slice 1

Title Untitled To compute uncertainties, use the same project name in MySQL as well.

Project Home C:\Users\library\citespace\Examples\Template\project Browse

Data Directory C:\Users\library\citespace\Examples\Template\data Browse

Data Source WoS Scopus Lens S2AG/MAG CNKI/WanFang CSCD CSSCI PubMed

Preferred Language English Chinese

SO Filter: SC Filter:

Alias List (on/off)	on
Export Space (on/off)	off
Export Matrices (csv) (off/on)	off
Save Merged Slice (off/on)	off
Phrase/Keyword: Maximum Words (4)	4
Maximum GML Node Label Length (8)	8
Include GP (Group Author) (off/on)	off
Node Degree Weighted (true)	true
Link Retaining Factor (LRF)(*N; -1:unlimited)	3
Maximum Links Per Node (L/N) (-1:unlimited)	5
Filter Refs By Intrinsic Citations	on
Use Authors' Fullnames	on
<input type="checkbox"/> Normalize Citations	<input checked="" type="checkbox"/> Global Check

Description How did you create the dataset?

Save Cancel

分析结果保存
数据文件夹



CiteSpace 6.1.R4 (64-bit) Basic - (c) 2003-2022 Chaomei Chen - Home: C:\Users\library

File Projects Data Visualization Overlay Maps Analytics Network Text Preferences Tutorials Help

Web of Science

Projects
New PSCs More Actions ...

Project Home: D:\PSCs\测试

Data Directory: D:\PSCs\2020.01.17

按照预设条件运行的情况

GO! Stop Reset JVM Memory 1596 (MB) Used 44 %

Space Status

Pruning configuration:

Year	Pruning Type	Top N	Strength	Total References
2009	top 50	16	16	120 / 120
2010	top 50	13	13	78 / 78
2011	top 50	79	79	745 / 745
2012	top 50	128	128	1682 / 1682
2013	top 50	636	60	1080 / 1080
2014	top 50	3277	51	1275 / 1275
2015	top 50	9397	51	1275 / 1275
2016	top 50	15652	51	1275 / 1275
2017	top 50	22990	51	1275 / 1275
2018	top 50	29046	52	1326 / 1326
2019	top 50	34410	52	1326 / 1326

可视化

Process Reports

Document Types

- 112607 Article
- 1683 Article; Early Access
- 1518 Article; Proceedings Paper
- 33 Article; Retracted Publication
- 7282 Review
- 462 Review; Early Access

Distinct references [Valid]: 107706 99.4231%

Distinct references [Invalid]: 625 0.5769%

Parsing Time: 2 minutes 20 seconds

Time Slicing
From 2009 JAN To 2019 DEC #Years Per Slice 1

Text Processing
Term Source: Title Abstract Author Keywords (DE) Keywords Plus (ID)
Term Type: Noun Phrases Burst Terms Detect Bursts Entropy

Your Options
What's your choice?
Visualize Save As GraphML Cancel

将所生成的网络存为图表文件

Keyword Term Source Category Journal

Strength Cosine Scope Within Slices

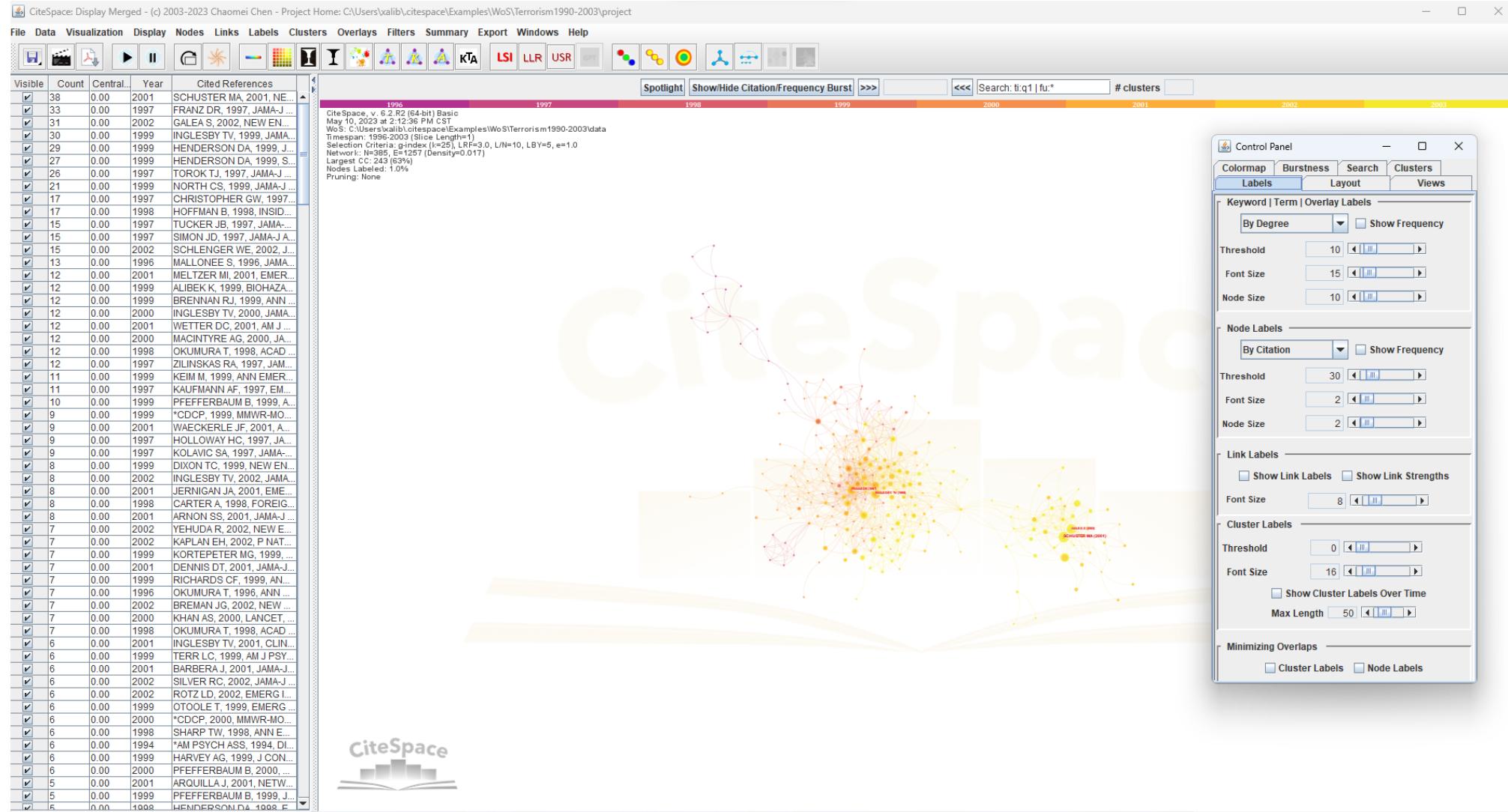
Selection Criteria
g-index Top N Top N%
Select top 50 levels of most cited or occurred items from each slice.
Each level may include multiple qualified nodes.
The minimum level e is set in the project properties.

Pruning Visualization

Pruning
Pathfinder Minimum Spanning Tree Pruning sliced networks Pruning the merged network

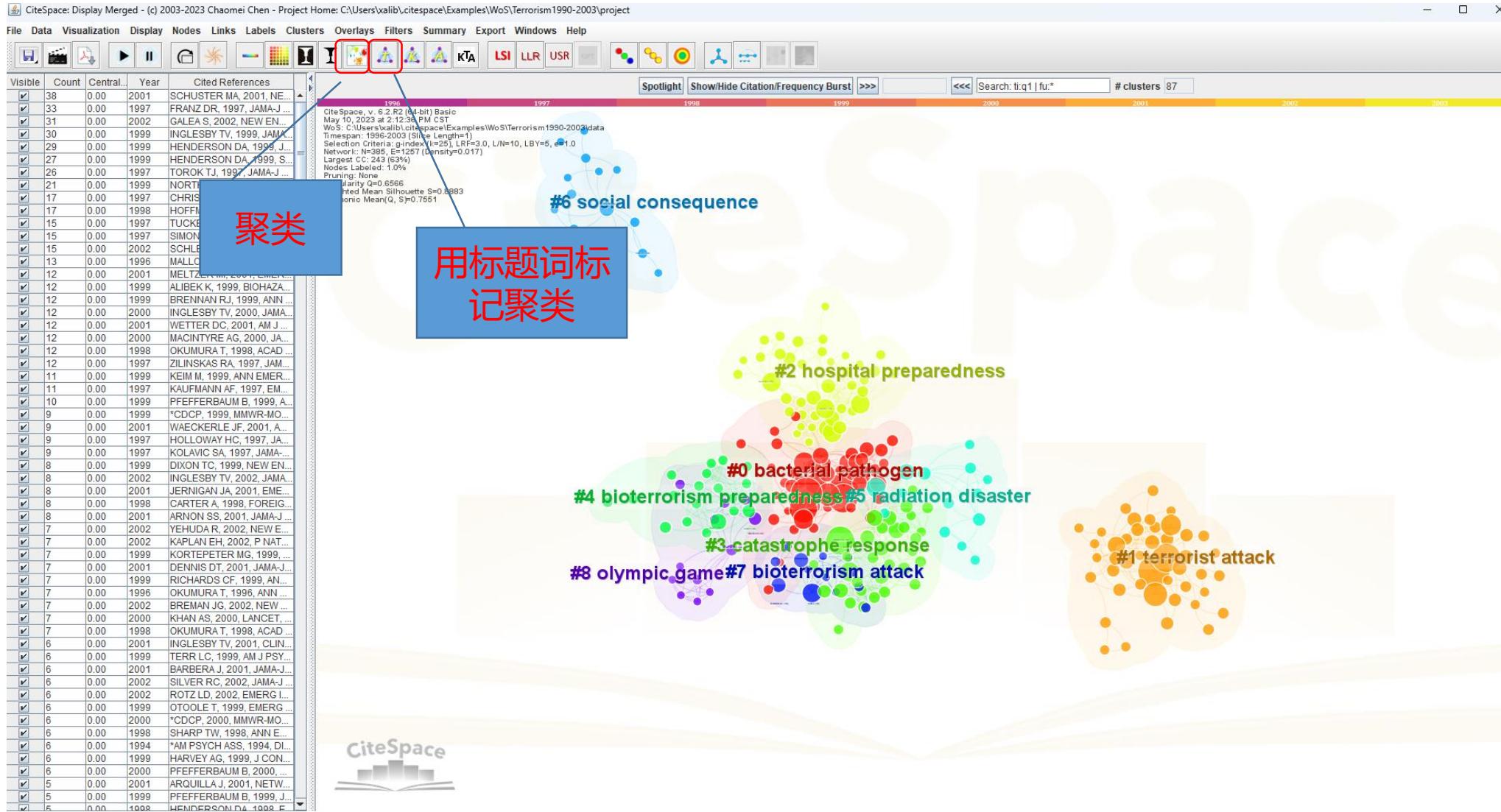
网络基本参数及运行过程

可视化结果



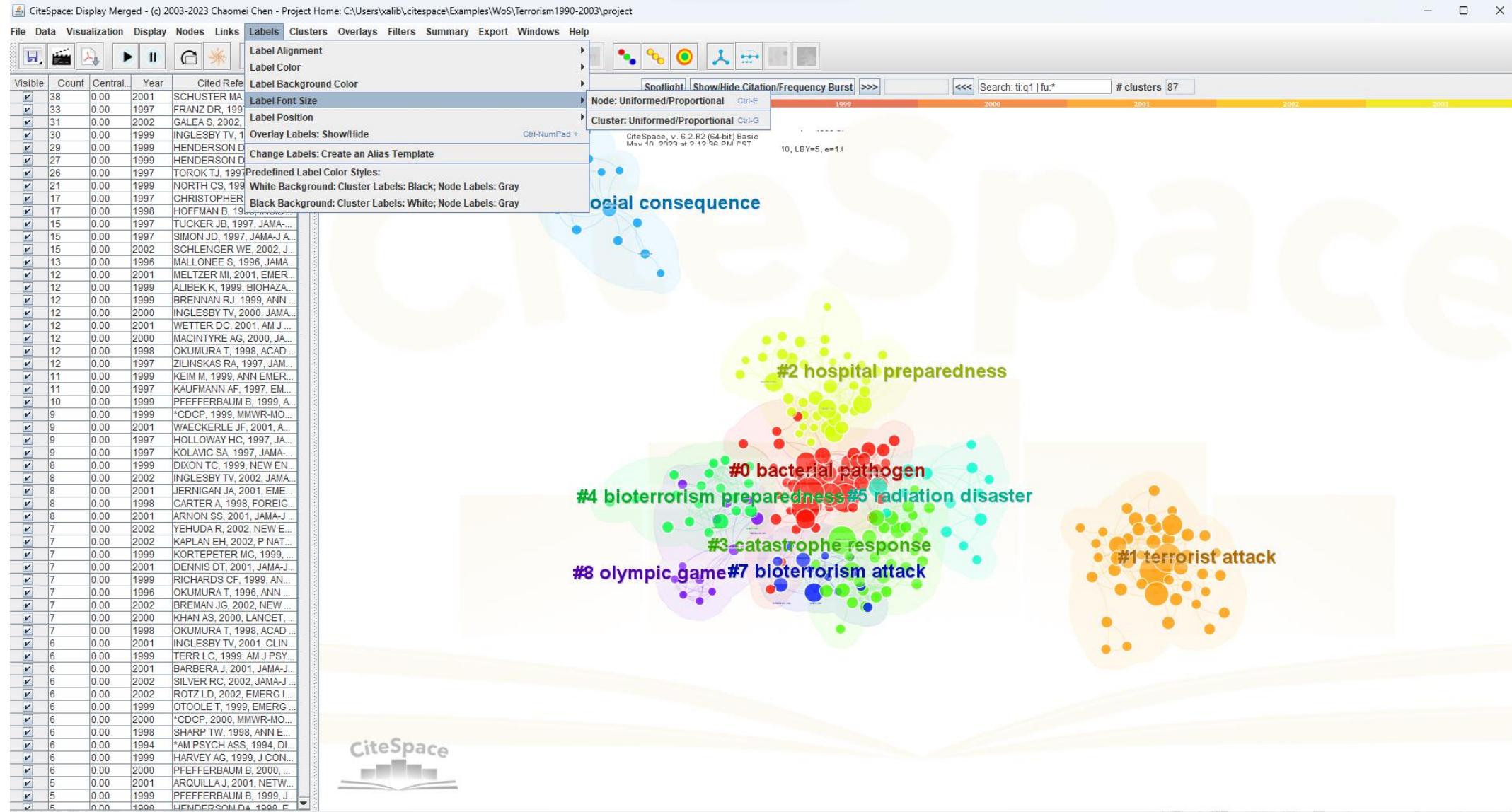
当网络布局稳定

对共被引网络进行聚类



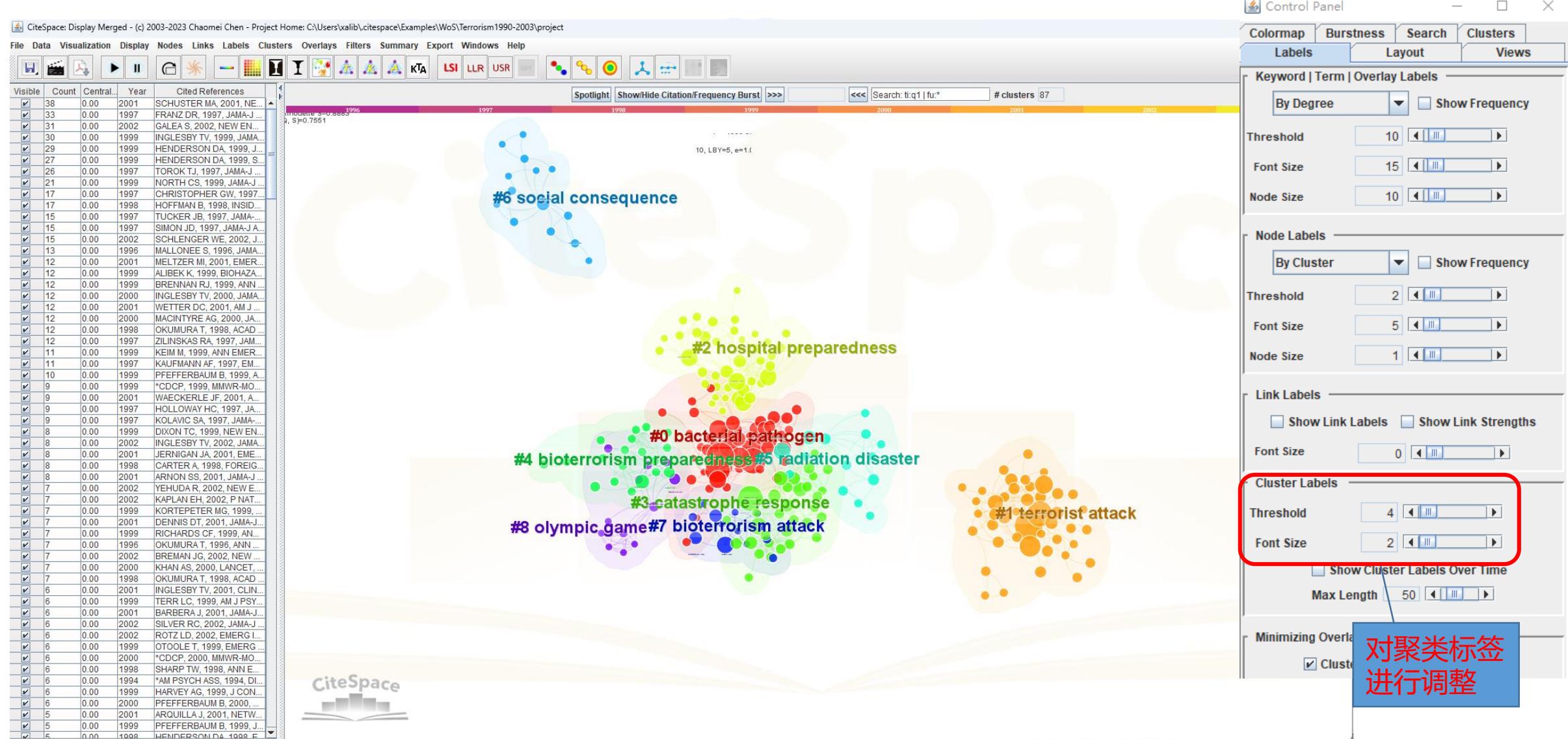


对聚类的标签进行调整（按照聚类规模进行显示）



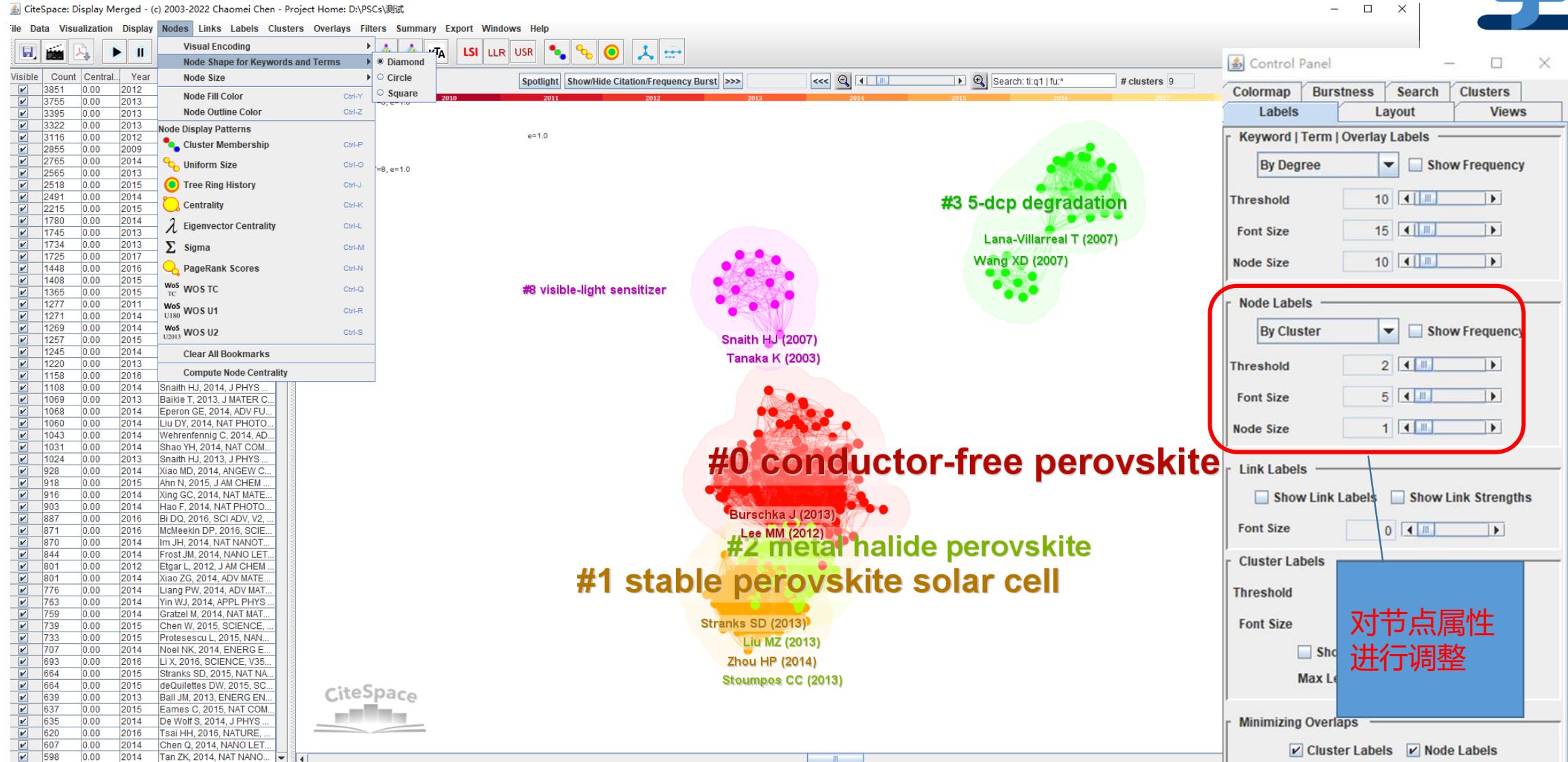


对聚类的标签进行调整（按照聚类规模进行显示）



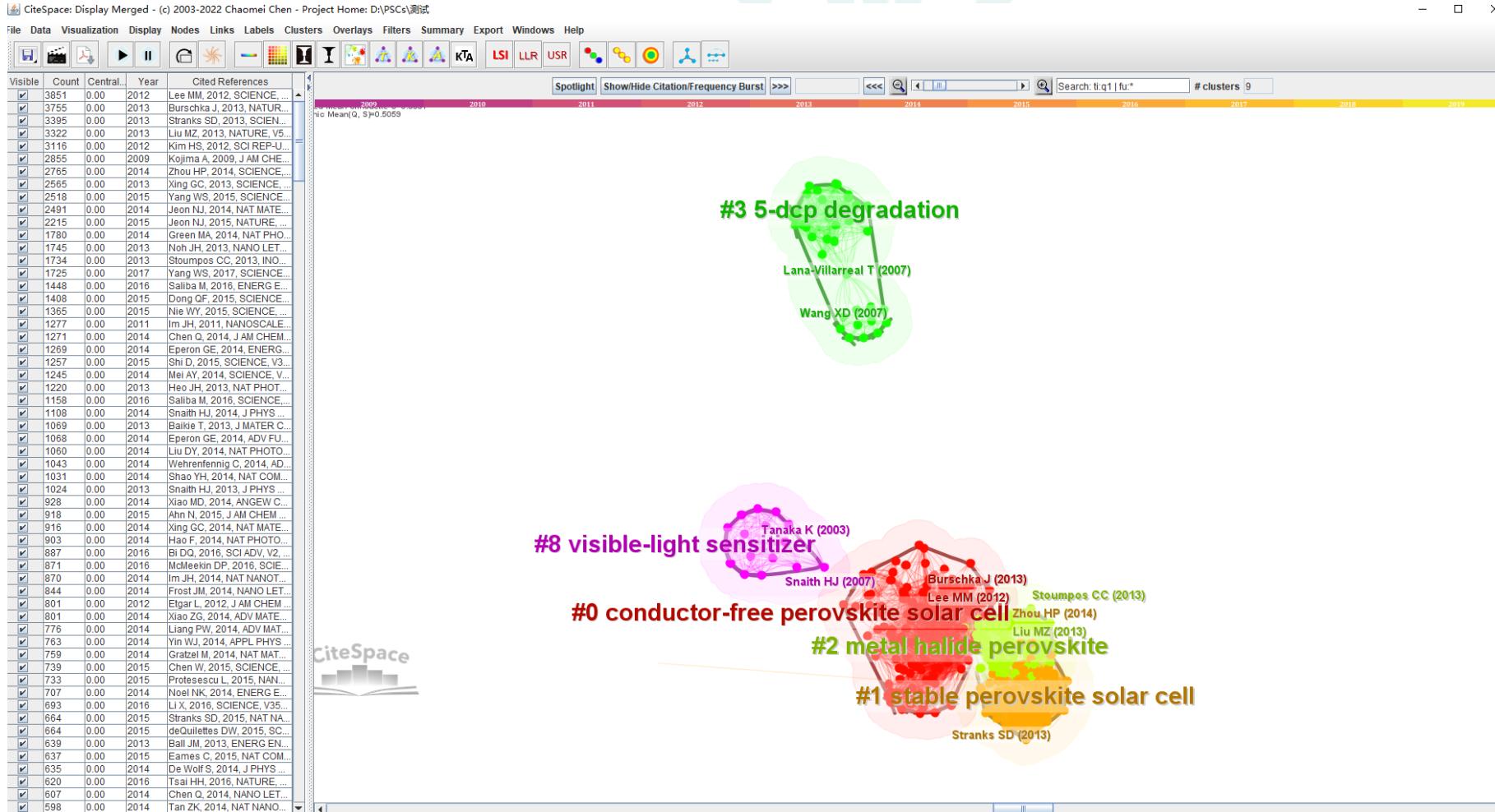


对节点属性进行调整





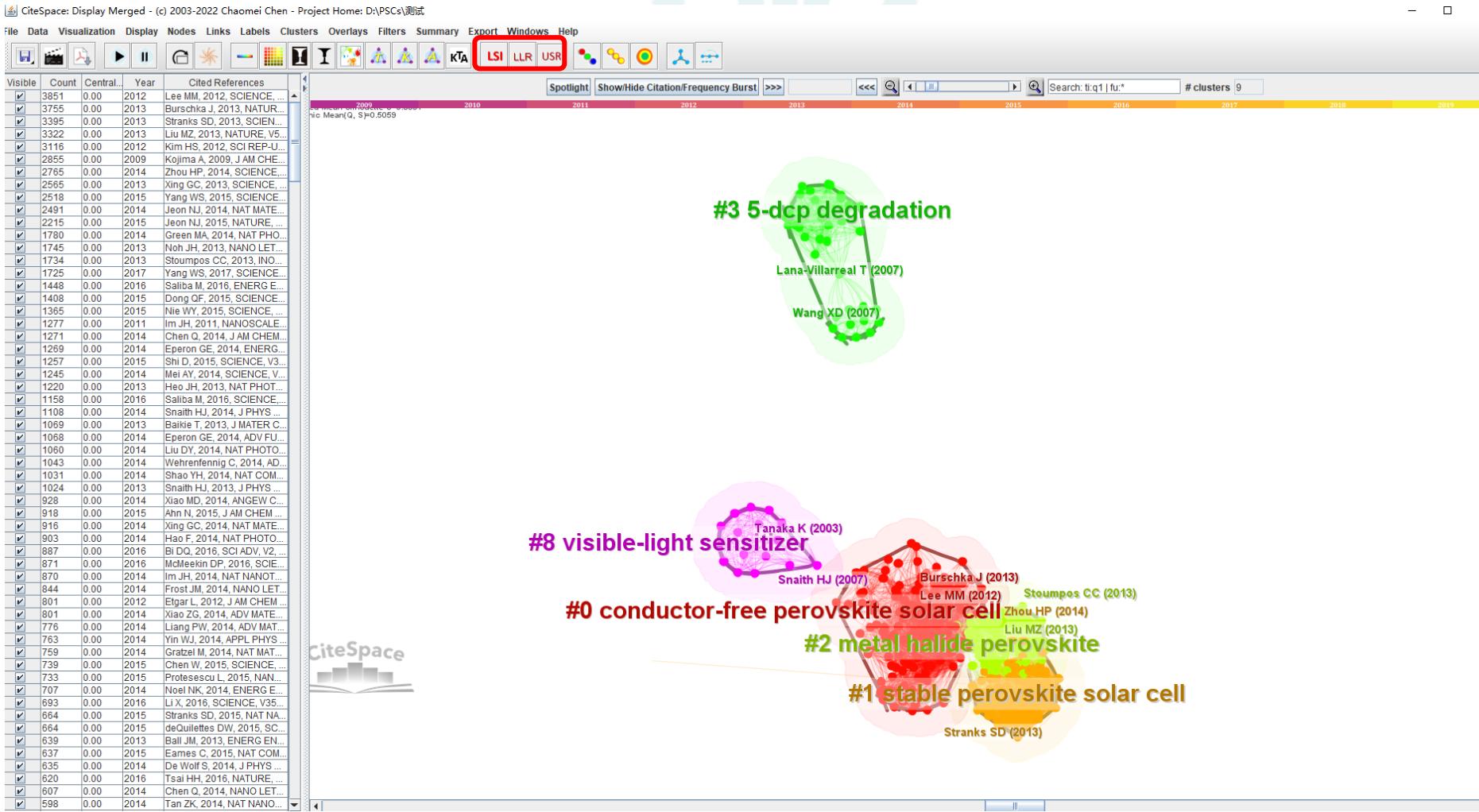
对聚类的轮廓显示进行调整



文献共被引分析

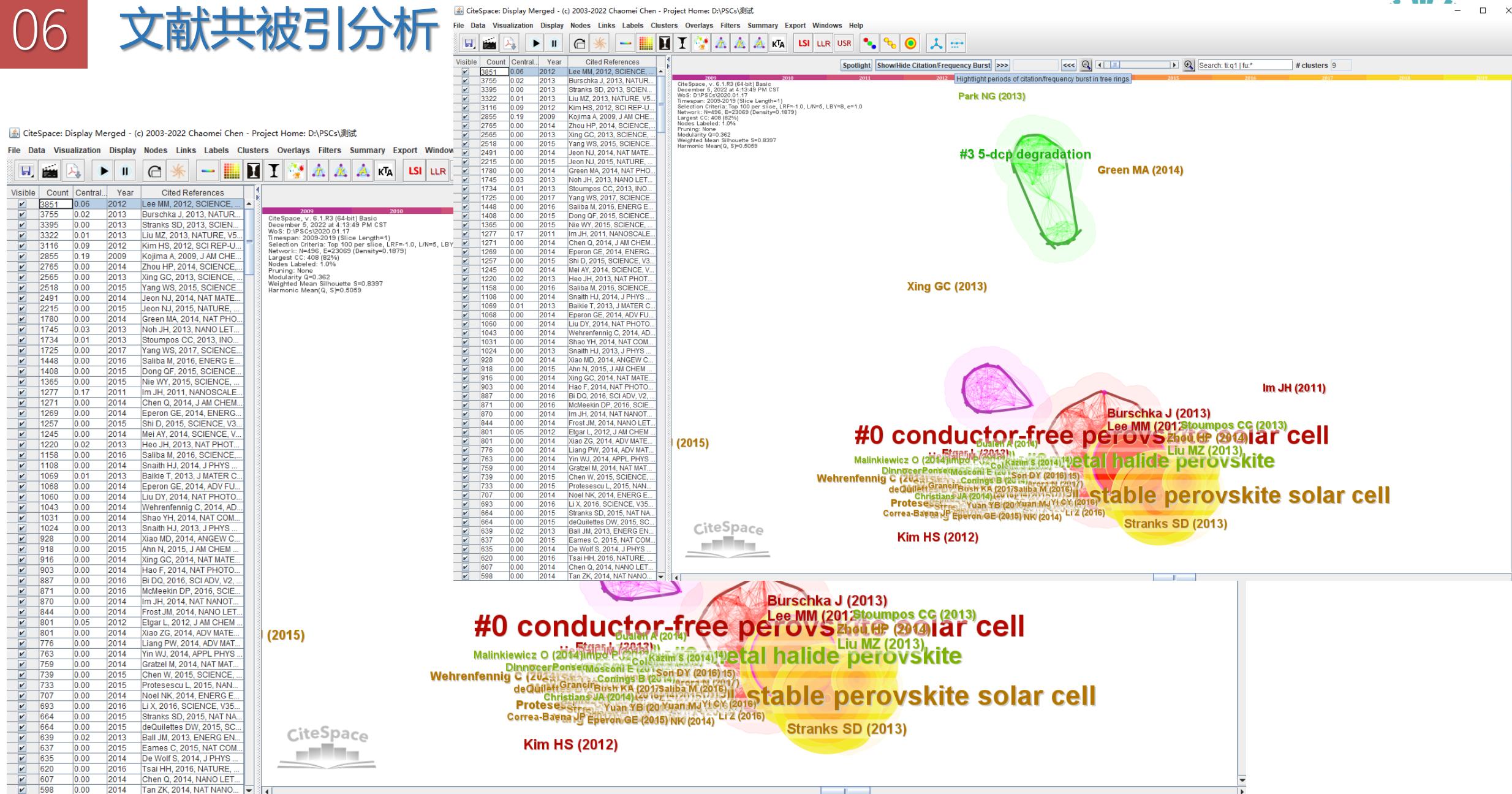


得到较为满意的图谱后，使用有三种不同的算法对聚类进行命名。通常情况下陈教授推荐使用LLR算法得到的结果。



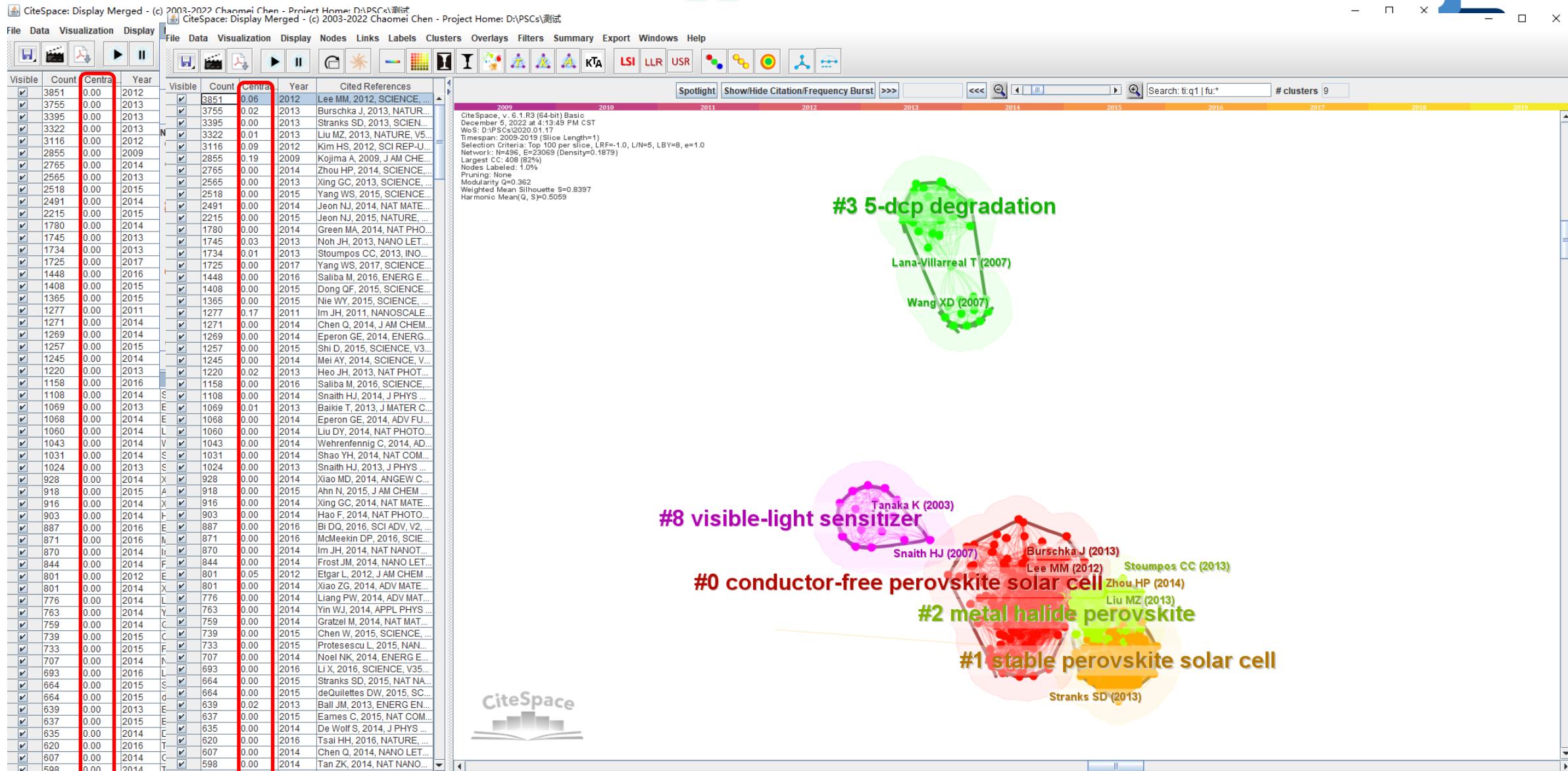
LLR

文献共被引分析



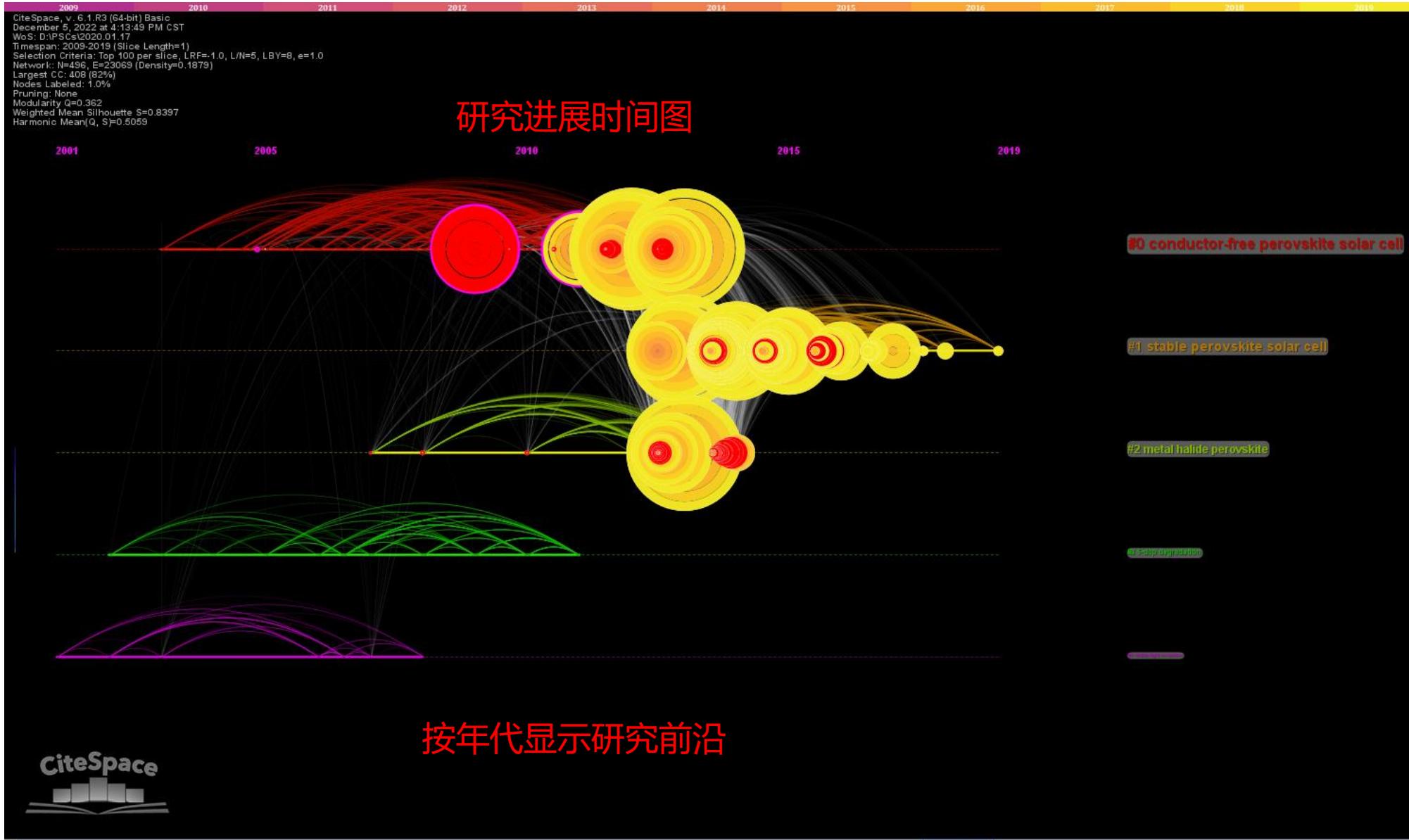


计算节点的中介中心性



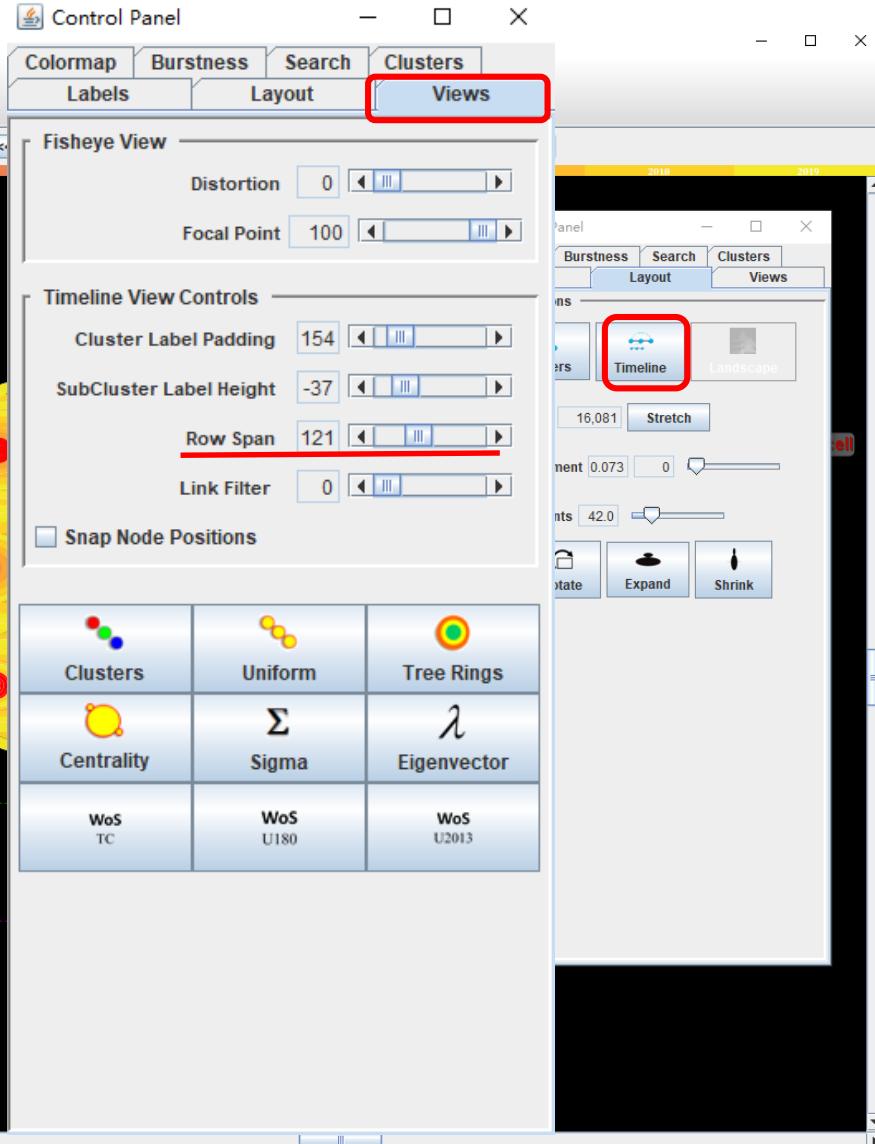
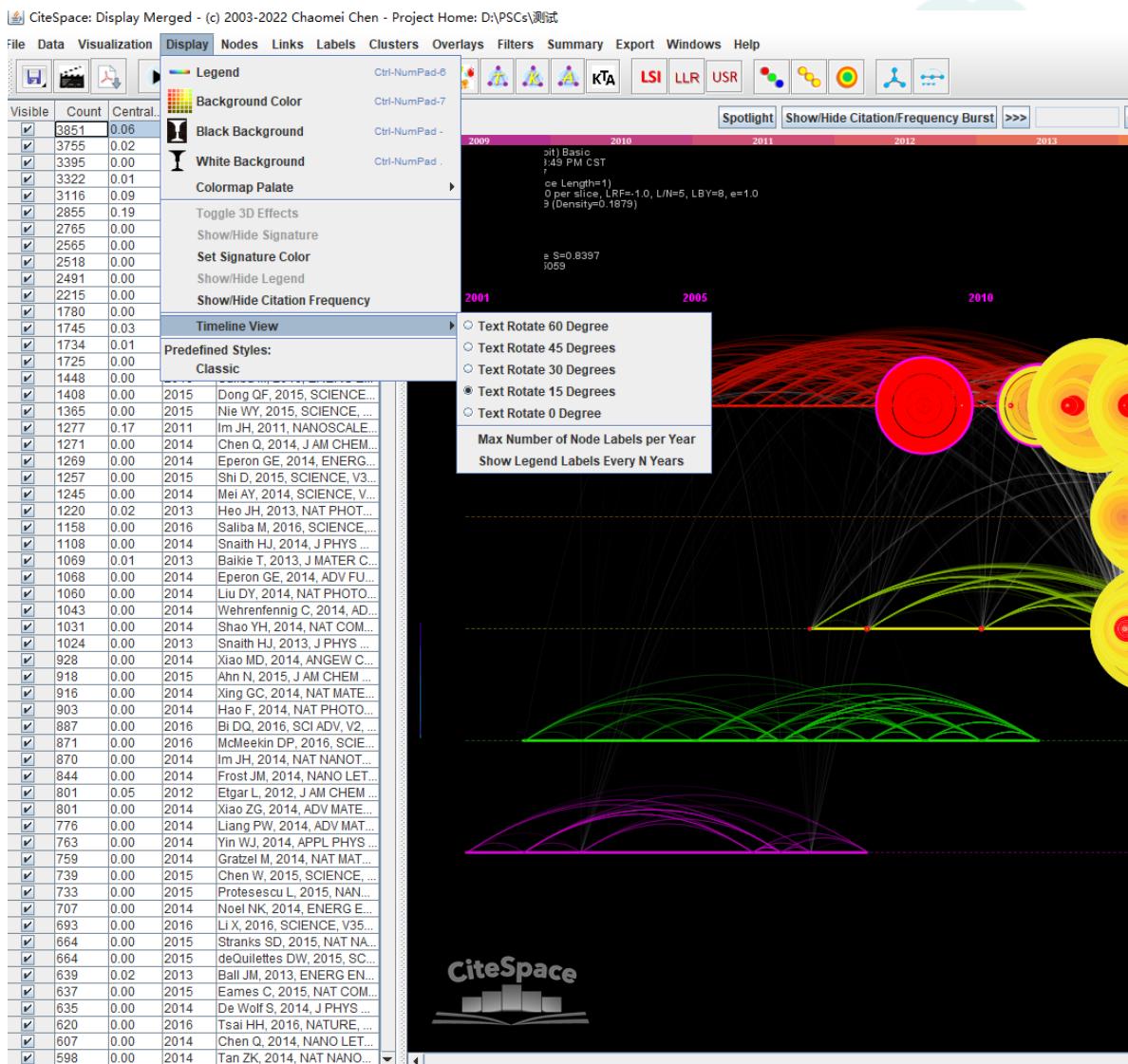


Timeline 呈现方式



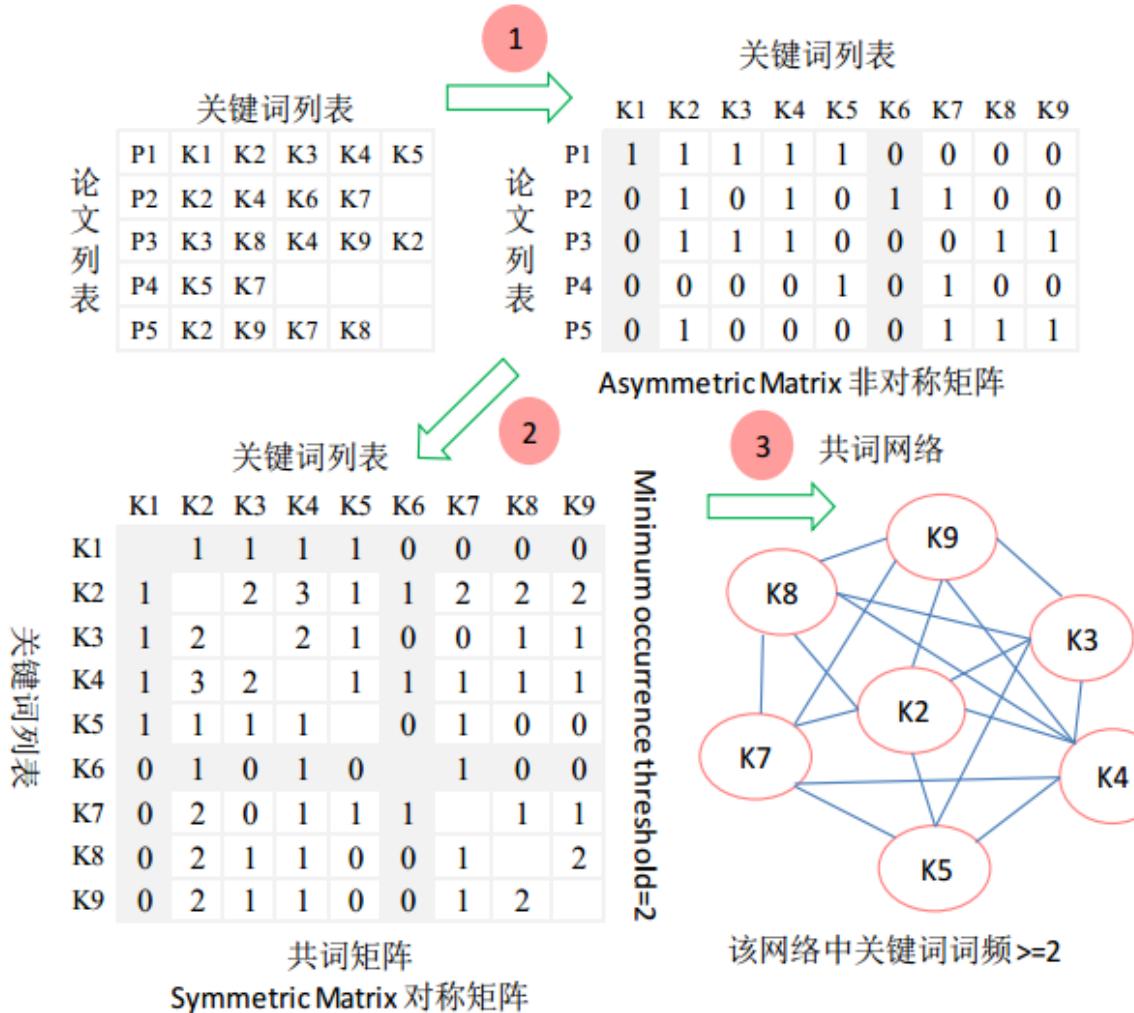


Timeline 呈现方式





词频和共词分析





Whittaker最早提出共词分析的假设前提 (Whittaker, 1989)

- a)作者是很认真的选择技术术语；
- b)当在同一篇文章中使用不同的术语时，就意味着这些术语之间的关系并不是微不足道，且一定是被作者认可和认同；
- c)如果有足够多的作者对同一种关系认可，那么这种关系可以认为在他们所关注的科学领域中具有一定意义；
- d)当针对关键词时，经过专业学习的学者，在其论文中标引出来的关键词是能够反映文章的内容的，是值得信赖的指标。在作者标引关键词时，通常也会受到其他学者成果的影响，而在论文中使用相同或者类似关键词标引自己的论文。

主题共现分析——关键词共现分析



File Project Data Network Visualization Geographical Overlay Maps Analytics Text Preferences Help

Web of Science PubMed

Projects
New PSCs More Actions ...

Project Home: E:\PSCs\analysis

Data Directory: E:\PSCs\data

GO! Stop Reset JVM Memory 1021 (MB) Used 18 %

Space Status

Year Range	Top 100	N	0	0 / 0
2010-2010	top 100	7	0	0 / 0
2011-2011	top 100	40	3	2 / 2
2012-2012	top 100	70	7	9 / 9
2013-2013	top 100	223	57	425 / 425
2014-2014	top 100	805	113	2506 / 2506
2015-2015	top 100	2217	103	3563 / 3563
2016-2016	top 100	3427	103	4152 / 4152
2017-2017	top 100	4803	101	4217 / 4217
2018-2018	top 100	2275	110	3408 / 3408

Process Reports

Records in the dataset: 6462
Records within the chosen range: 6452

Parsing Time: 30.608 seconds
Total Run time: 35.169 seconds

Merged network: Nodes=184, Links=9061
Exclusion List: 0
Network modeling ends at Fri May 25 16:15:41 CST 2018.

Time Slicing
From 2009 To 2018 #Years Per Slice 1

Term Source
 Title Abstract Author Keywords (DE) Keywords Plus (ID)

Term Type
 Noun Phrases Burst Terms Default Bursts Entropy

Node Types
 Author Institution Country Term Keyword Category
 Cited Reference Cited Author Cited Journal Paper Grant

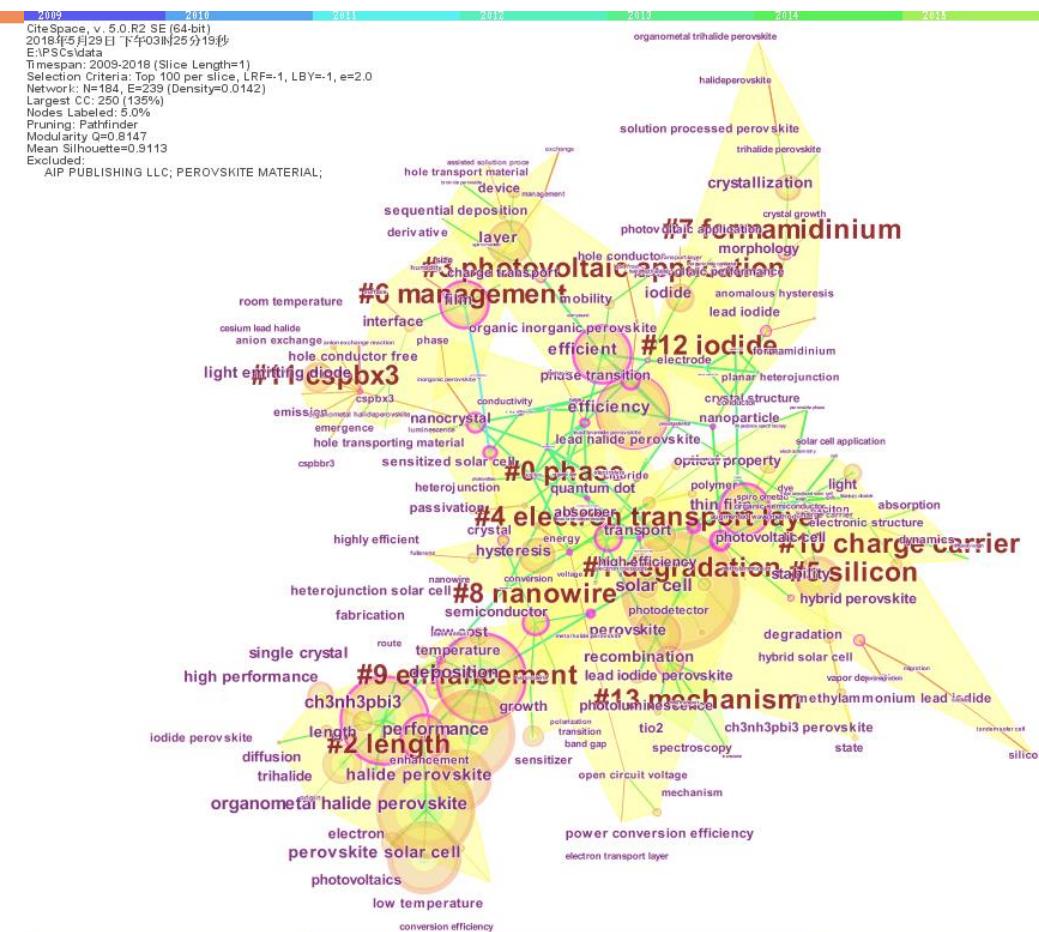
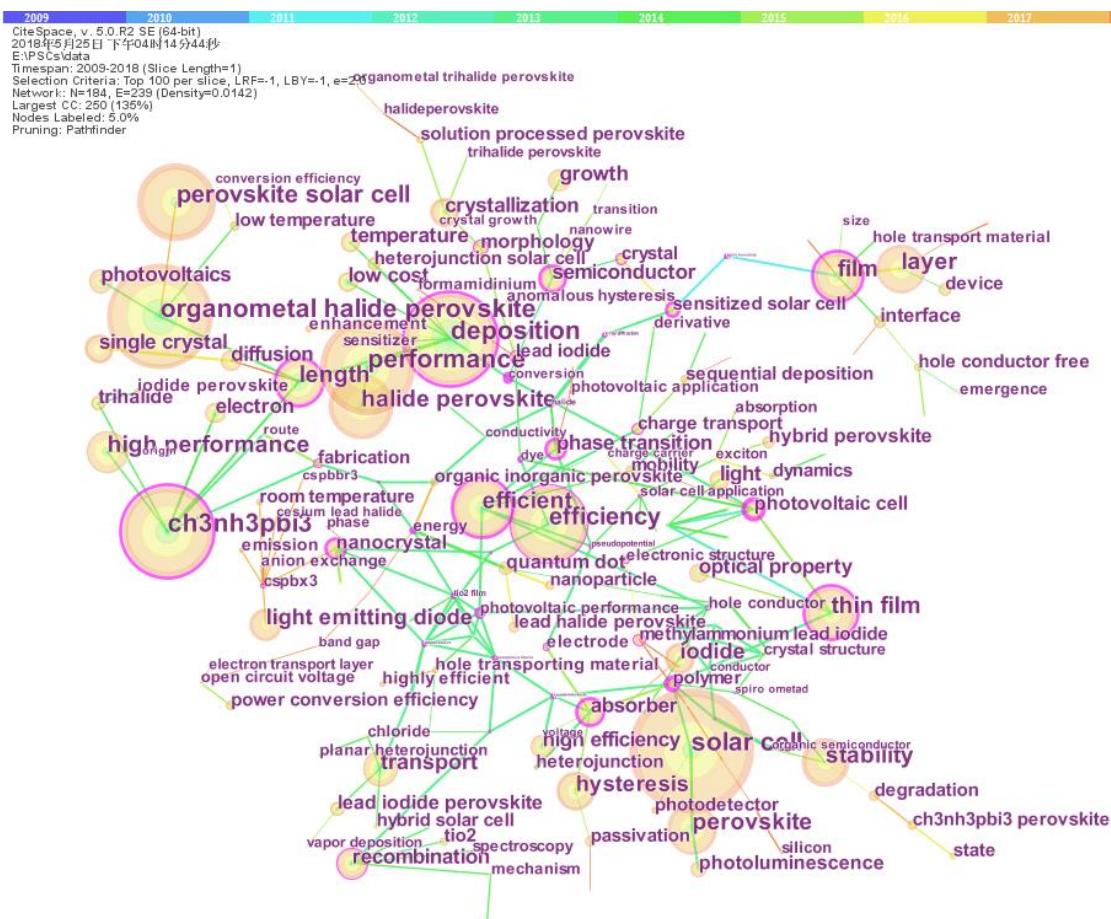
Links
Strength Cosine Scope Within Slices

Selection Criteria
Top N Top N% g-index Thresholds Citations Usage180 Usage2013
Select top 100 most cited or occurred items from each slice.

Pruning
 Pathfinder Pruning sliced networks
 Minimum Spanning Tree Pruning the merged network

Visualization
 Cluster View - Static Show Networks by Time Slices
 Cluster View - Animated Show Merged Network

主题共现分析——关键词共现分析



主题共现分析——名词性术语共现分析



1. 点击Term type中的“Noun Phrases”。再点击“Create POS Tags”

The screenshot shows the CiteSpace 5.3.R4 software interface. In the 'Text Processing' section, under 'Term Type', the 'Noun Phrases' option is selected. A blue arrow points from this section down to a 'Part-of-Speech Tagging Options' dialog box. This dialog box contains a message: 'POS tagging may take a few minutes or even longer to complete.' It has two buttons: 'Create POS Tags' (highlighted by a blue arrow) and 'Do Not Create POS Tags'. The background shows other parts of the software like 'Space Status' and 'Process Reports'.



中文不能使用名词性术语
提取功能，因为该功能是
专门基于英文处理的

主题共现分析——名词性术语共现分析



2. 在Space status中出现主题提取的years...Uniquesource records,表示提取过程结束

Screenshot of the CiteSpace 5.3.R4 software interface showing the process of extracting thematic terms from a dataset.

The main window displays the following information:

- Projects:** PSCs
- Project Home:** E:\PSCs\analysis
- Data Directory:** E:\PSCs\data
- Time Slicing:** From 2014 To 2018 #Years Per Slice 1
- Text Processing:** Term Source (Title, Abstract, Author Keywords (DE), Keywords Plus (ID)) selected; Term Type (Noun Phrases) selected.
- Space Status:** CiteSpace is pre-processing data files. Please wait ...
Years: 10
Unique source records: 6462
- Node Types:** Various node types listed (Author, Institution, Country, Term, Keyword, Source, Category, Reference, Cited Author, Cited Journal, Article, Grant, Claim).
- Links:** Strength Cosine, Scope Within Slices
- Selection Criteria:** Top N (50 selected), Top N%, g-index, Thresholds, Citations, Usage180, Usage2013.
- Process Reports:** A list of document types and their counts:
 - 5 Article; Data Paper
 - 430 Article; Proceedings Paper
 - 10 Article; Retracted Publication
 - 1580 Review
 - 10 Review; Book ChapterParsing Time: 12 seconds, Total Run time: 15 seconds.
- Merged network:** Nodes=83, Links=2997, Exclusion List: 0, Network modeling ends at Tue Nov 20 11:59:46 CST 2018.
- Pruning:** Pathfinder, Minimum Spanning Tree, Pruning sliced networks, Pruning the merged network.

A red circle highlights the "Space Status" section, which shows the progress of the data processing and the number of unique source records (6462).

主题共现分析——名词性术语共现分析



3. 节点类型选择Term，并点击GO

Screenshot of CiteSpace 5.0.R2 SE software interface showing the configuration for a co-citation network analysis.

Projects: PSCs

Time Slicing: From 2009 To 2018 #Years Per Slice 1

Term Source: Title, Abstract, Author keywords (DE), Keywords Plus (ID) (all checked)

Term Type: Noun Phrases (radio button selected)

Node Types: Term (radio button selected, highlighted with a red circle)

Links: Strength Cosine, Scope Within Slices

Selection Criteria: Top N (radio button selected), Select top 100 most cited or occurred items from each slice.

Pruning: Pathfinder (checked), Pruning sliced networks (unchecked), Minimum Spanning Tree (unchecked), Pruning the merged network (checked)

Visualization: Cluster View - Static (radio button selected), Show Networks by Time Slices (unchecked), Show Merged Network (checked)

Space Status:

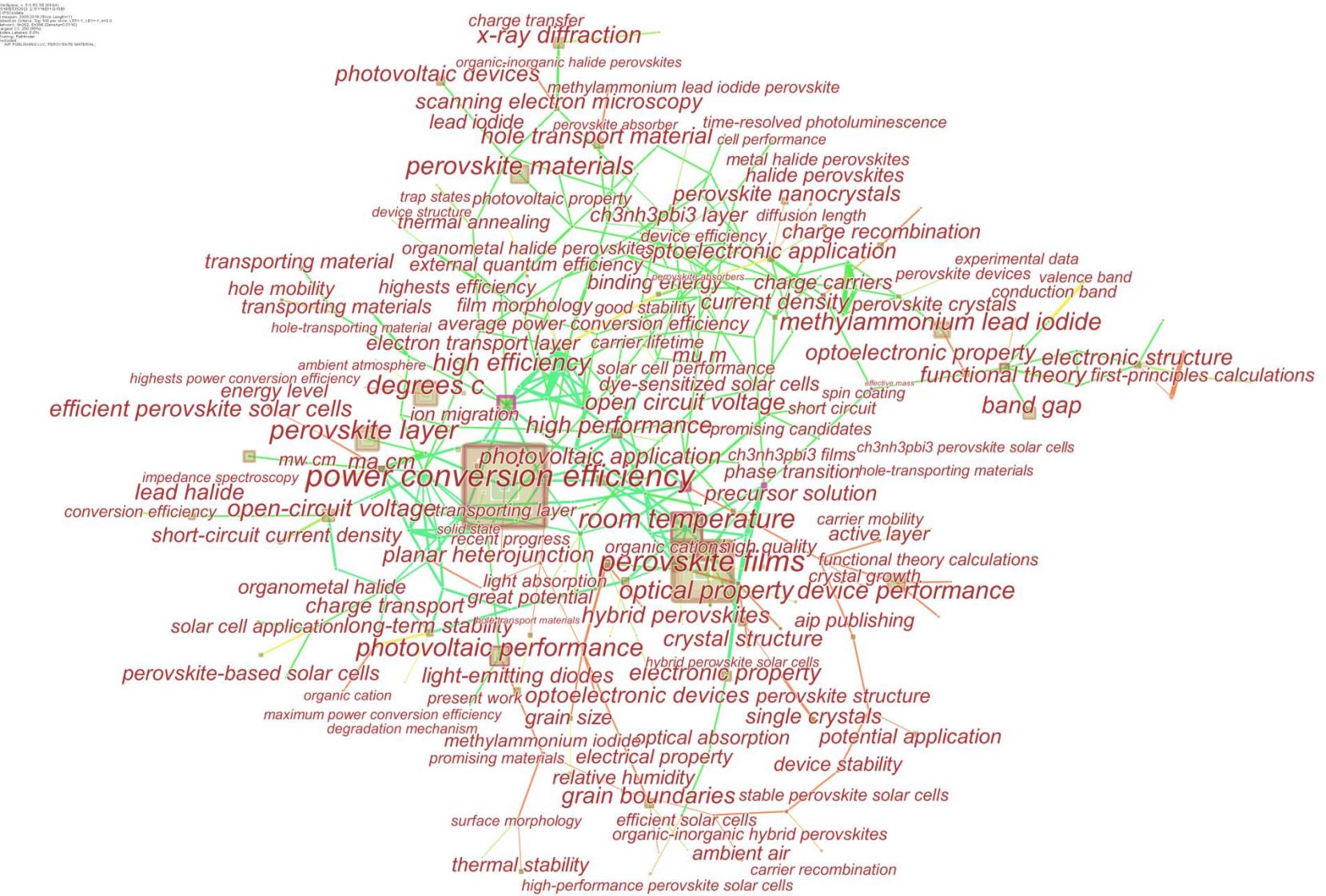
Year Range	Top 100	Count	0/0
2010-2010	top 100	18	0 / 0
2011-2011	top 100	77	0 / 0
2012-2012	top 100	200	3 / 1
2013-2013	top 100	776	51 / 228
2014-2014	top 100	5491	155 / 2089
2015-2015	top 100	14914	119 / 2309
2016-2016	top 100	25748	105 / 2724
2017-2017	top 100	33780	101 / 2941
2018-2018	top 100	11162	111 / 1772

Process Reports:

- Records in the dataset: 6462
- Records within the chosen range: 6457
- Parsing Time: 43.058 seconds
- Total Run time: 30.945 seconds
- Merged network: Nodes=262, Links=7710
- Exclusion List: 2
- Network modeling ends at Tue May 29 11:02:17 CST 2018.



4. 可视化结果



Dual-map overlay——Journal



CiteSpace 5.6.R5 (64-bit) - (c) 2003-2020 Chaomei Chen - Home \Users\library

File Projects Data Network Visualization Geographical Overlay Maps Analytics Text Preferences Tutorials Resources Help Donate

Web of Science JCR Journal Maps Time Slicing

From 2009 To 2019 #Years Per Slice 1

Projects

New PSCs More Actions ...

Project Home: D:\PSCs\Pathfinder outcome

Data Directory: D:\PSCs\2020.01.17

GO! Stop Reset JVM Memory 165 (MB) Used 51 %

Space Status

Node Types

Author Institution Country Term Keyword Source Category
 Reference Cited Author Cited Journal Article Grant Claim

Links

Strength Cosine Scope Within Slices

Selection Criteria

g-index Top N Top N% Thresholds Citations Usage180 Usage2013

The selection uses a modified g-index in each slice: $g^2 \leq k \sum_{i \in g} c_i, k \in \mathbb{Z}^+$

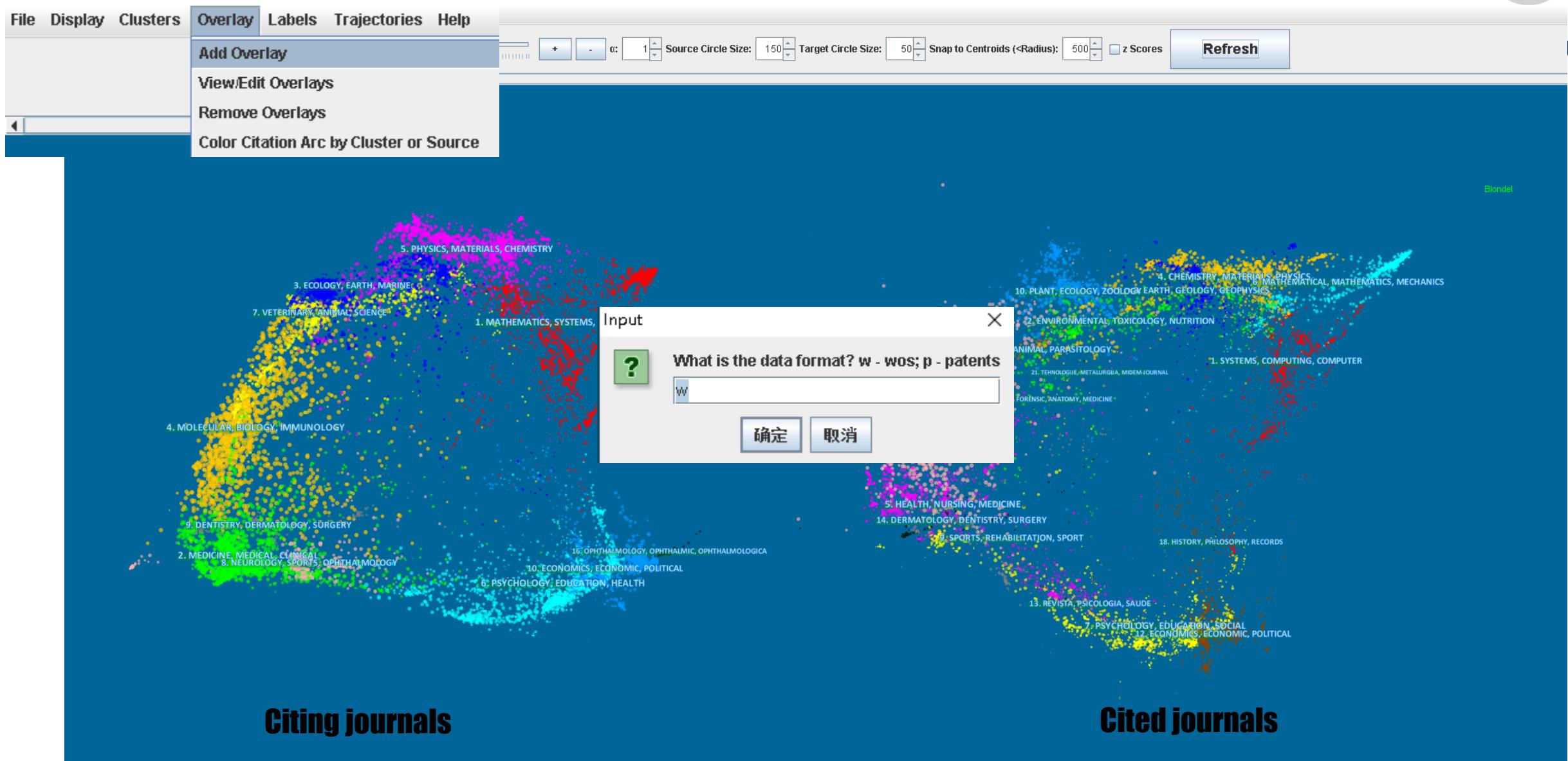
To include more or fewer nodes, increase or decrease the scale factor k = 25

Pruning Visualization

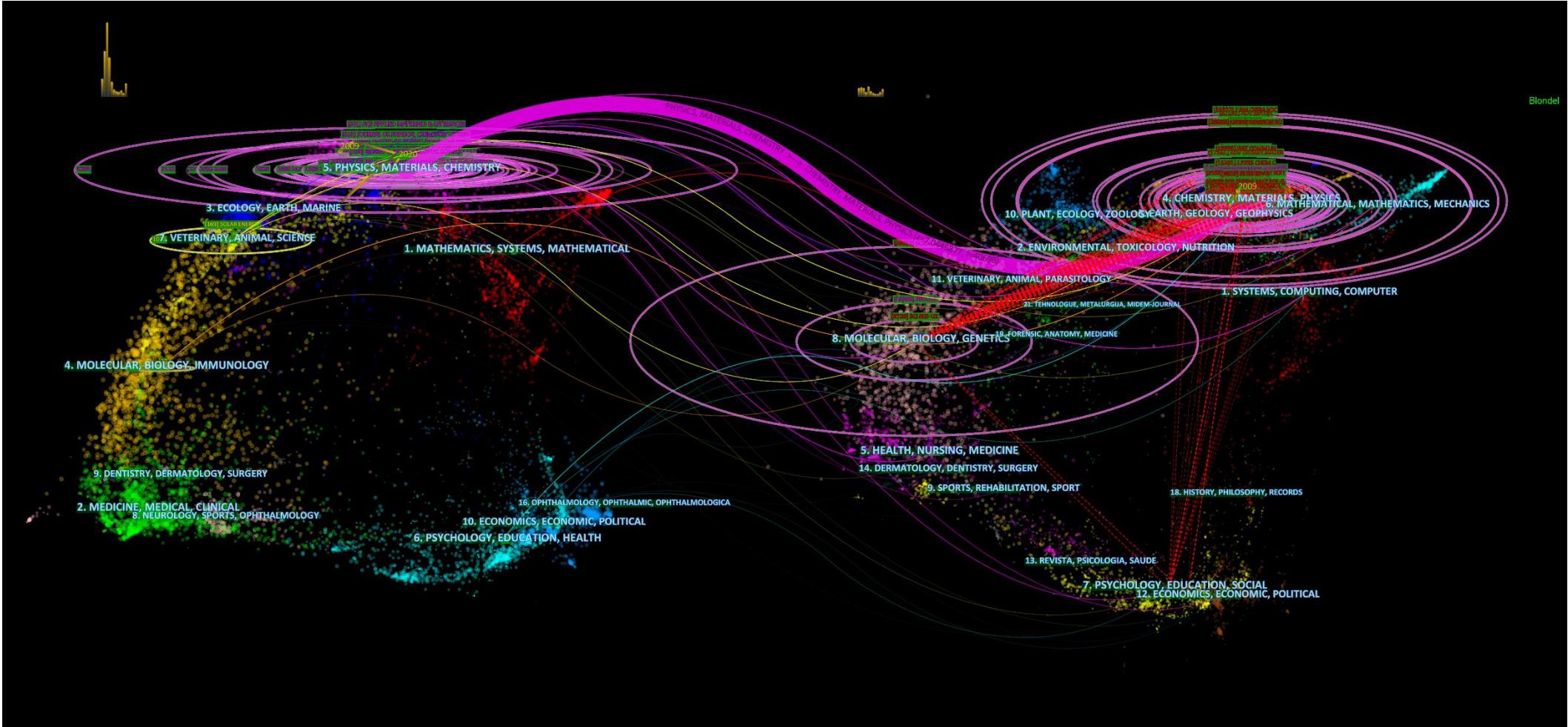
Pruning

Pathfinder Pruning sliced networks
 Minimum Spanning Tree Pruning the merged network

Dual-map overlay——Journal



Dual-map overlay——Journal



Citing journals

Cited journals

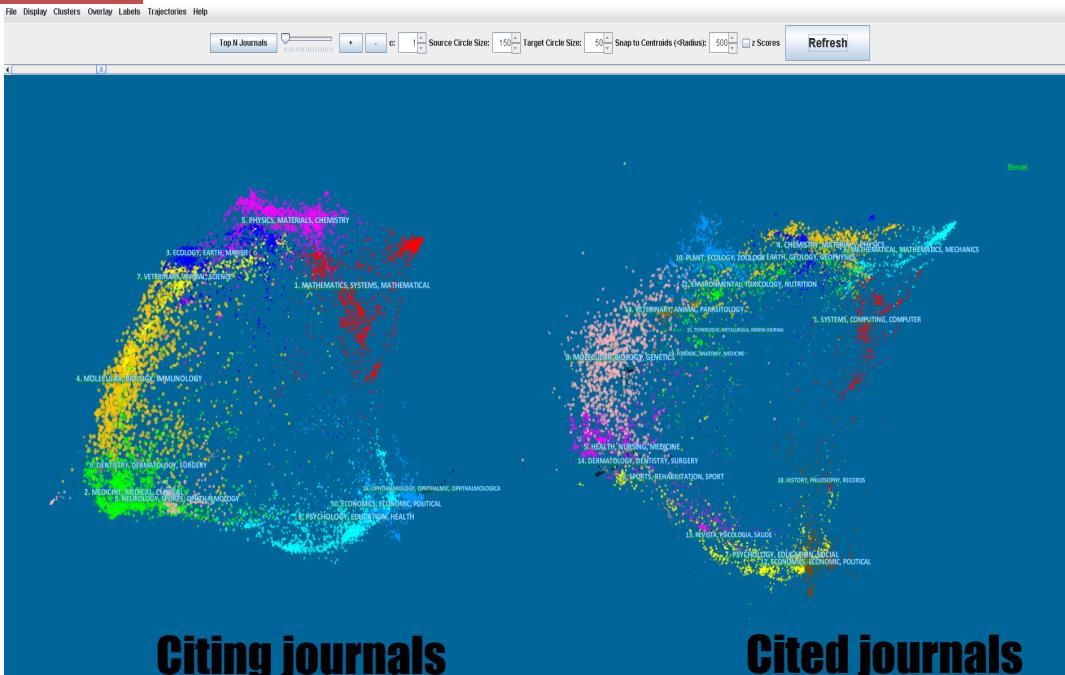


四

CiteSpace图谱解读

08

Dual-map overlay——Journal



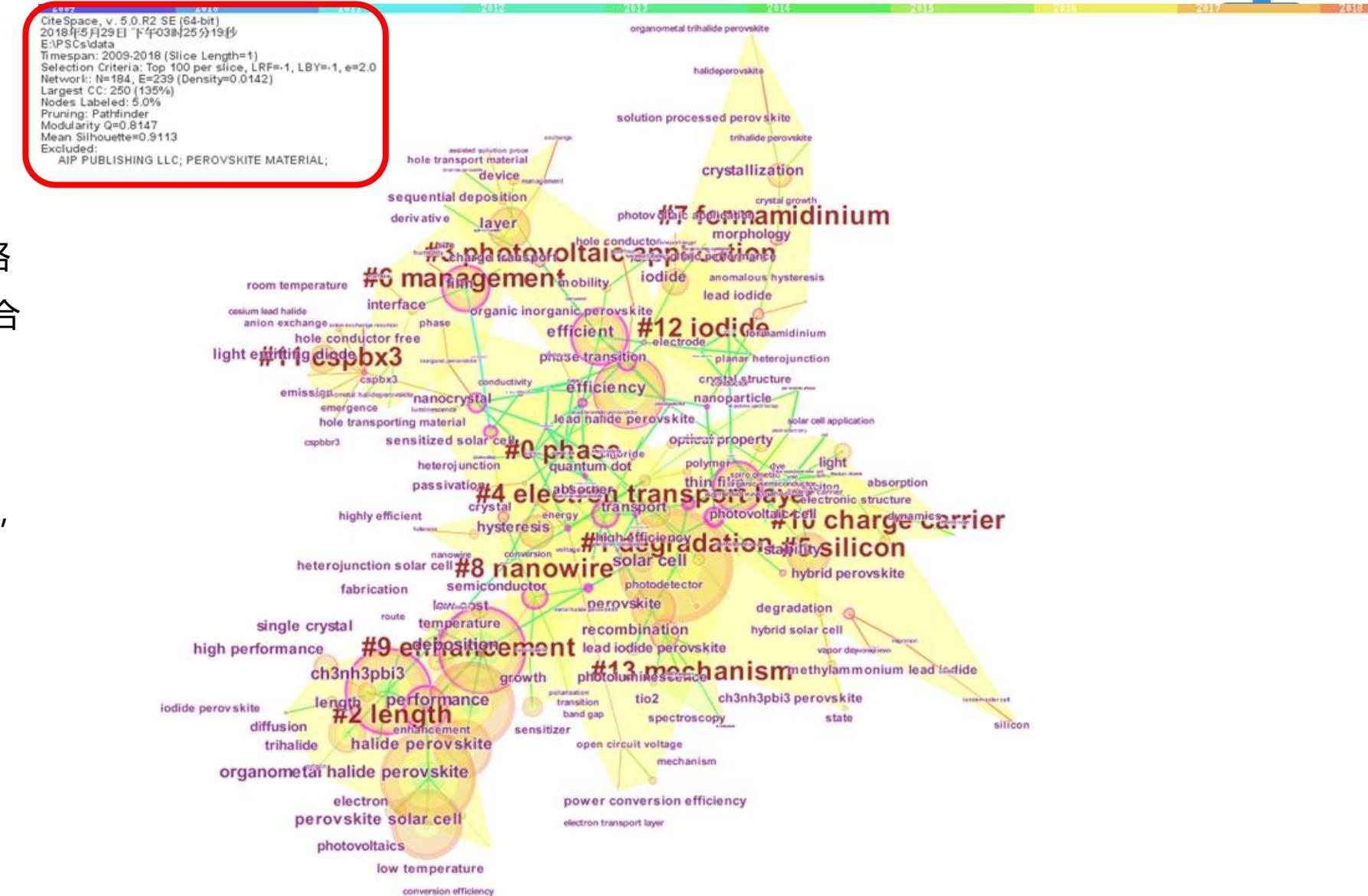
Citing journals

Cited journals





- the modularity Q and the mean silhouette scores : 这两个参数体现分析所形成的网络的质量。



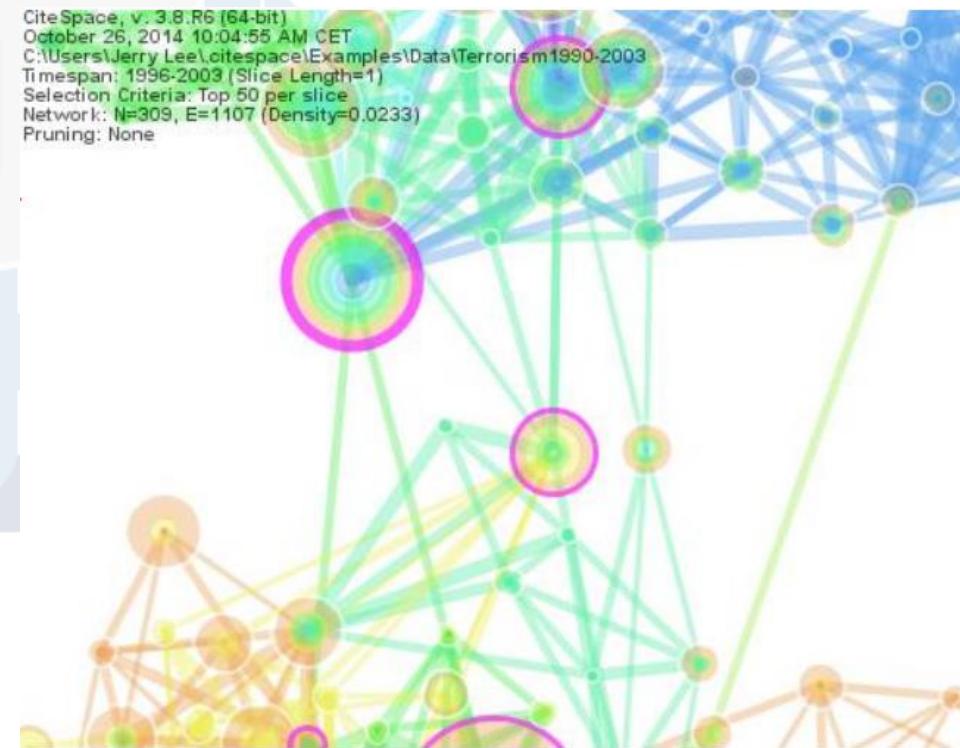
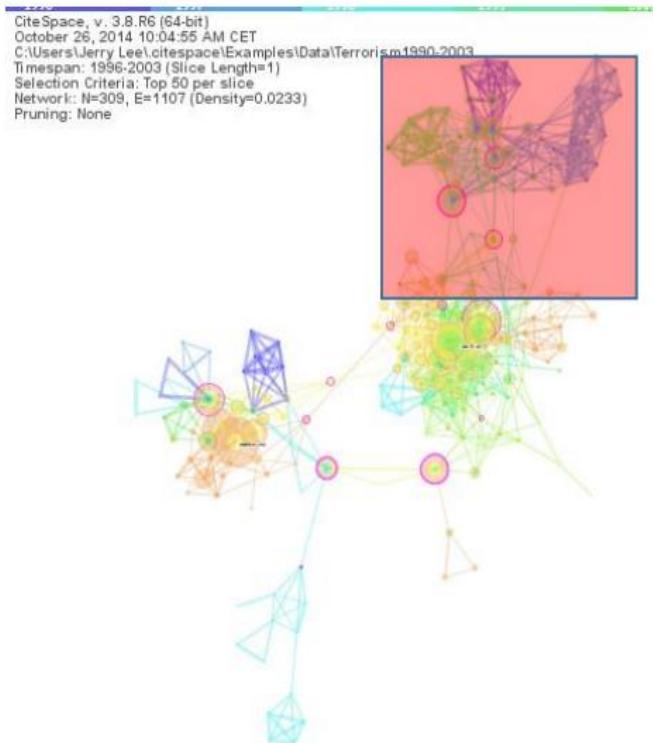
- $Q=[0, 1]$ 。体现所获得的聚类网络是否合理，一般在0.3~1之间是合理的

➤ the mean silhouette =[0, 1]。体现聚类的同质性（均一性），越大，聚类成员的一致性越好，各个聚类的大小相对比较合理。但是，如果某个聚类较小，则其该参数值越高并不能说明什么。

- 节点的数量、共引线数及网络的密度

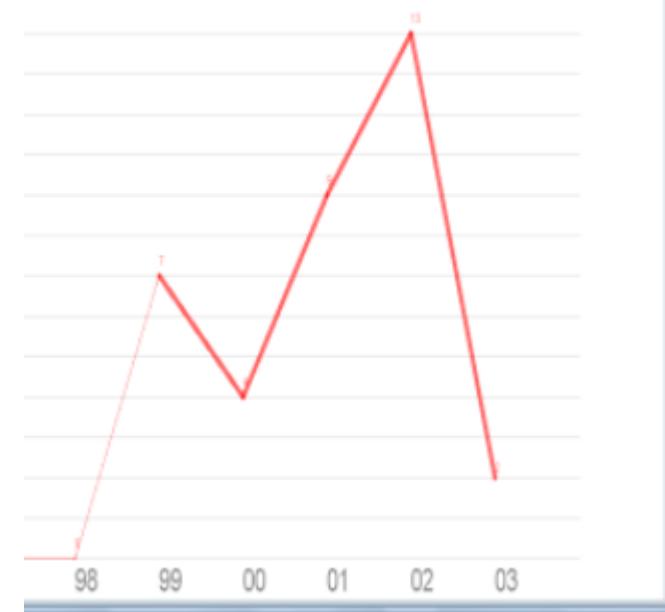
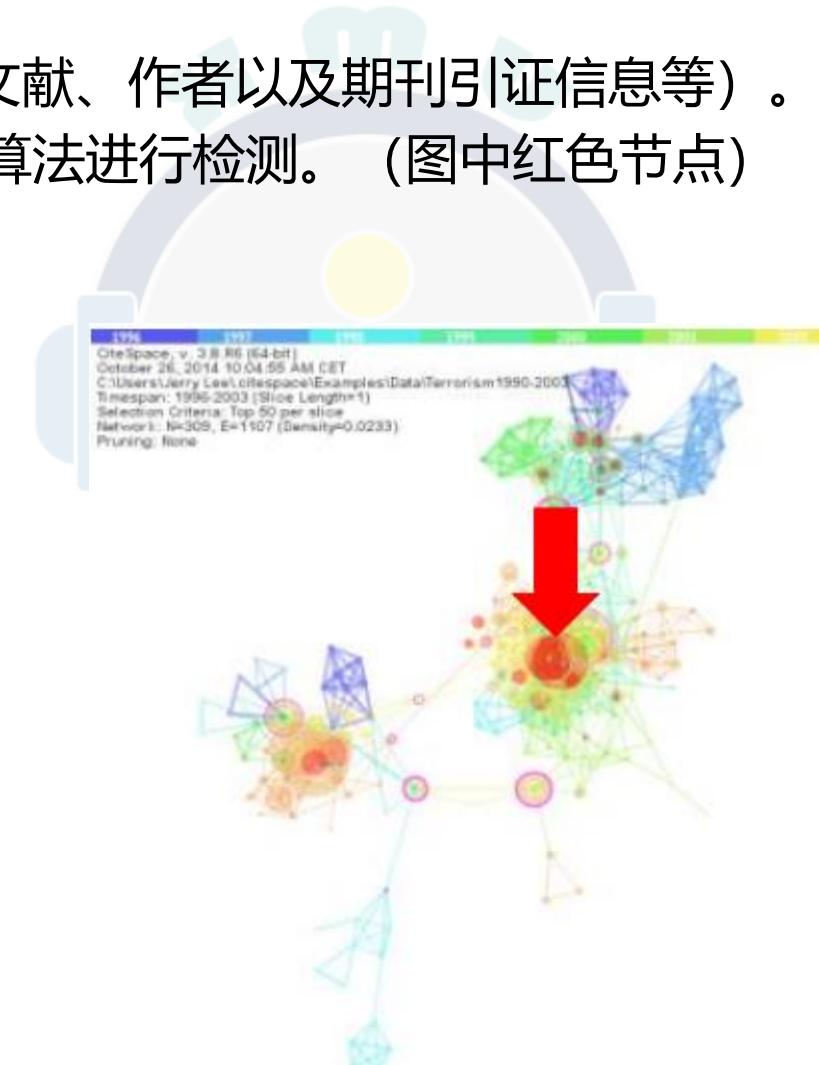
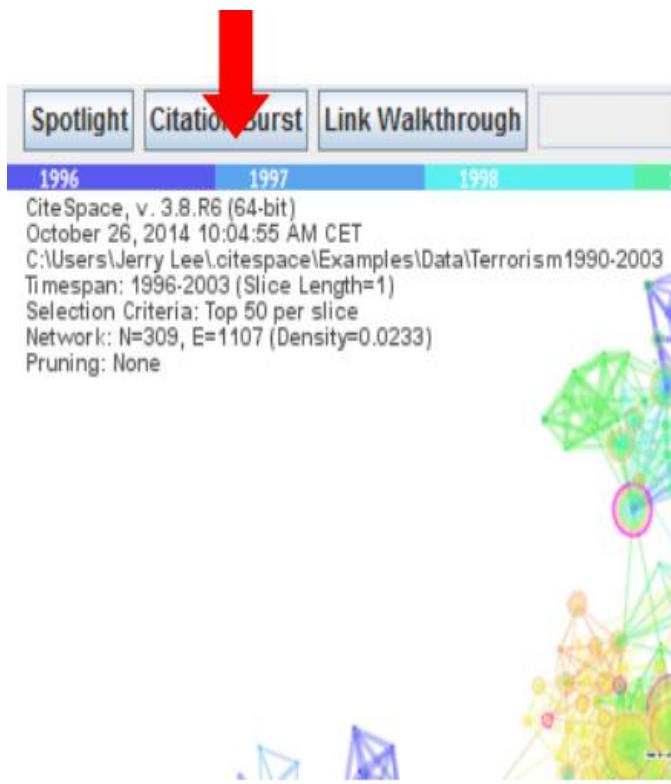


- Betweenness centrality: 中介中心性是测度节点在网络中重要性的一个指标。CiteSpace 中使用此指标来发现和衡量文献的重要性，并用紫色圈对该类文献（或作者、期刊以及机构等）进行重点进行标注。



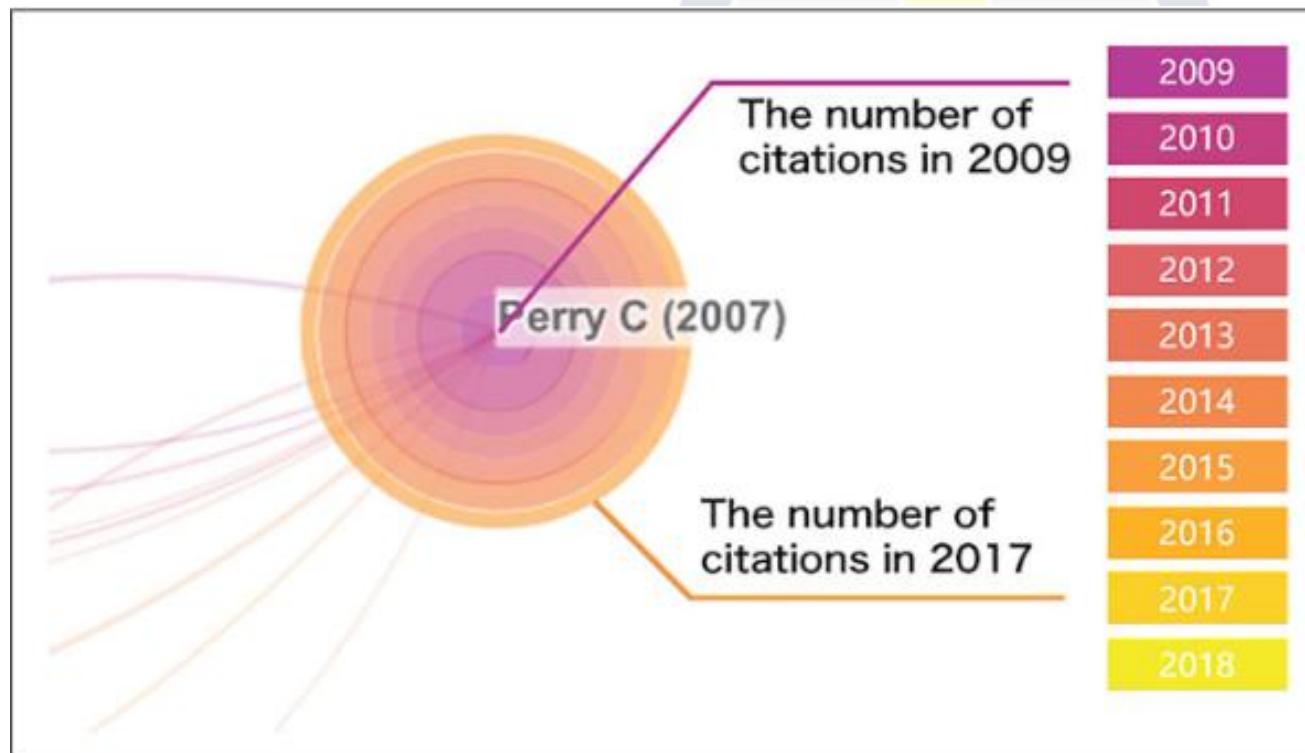


- **Burst 检测**: 突发主题（或文献、作者以及期刊引证信息等）。在 CiteSpace 中使用 Kleinberg, J (2002) 年提出的算法进行检测。（图中红色节点）



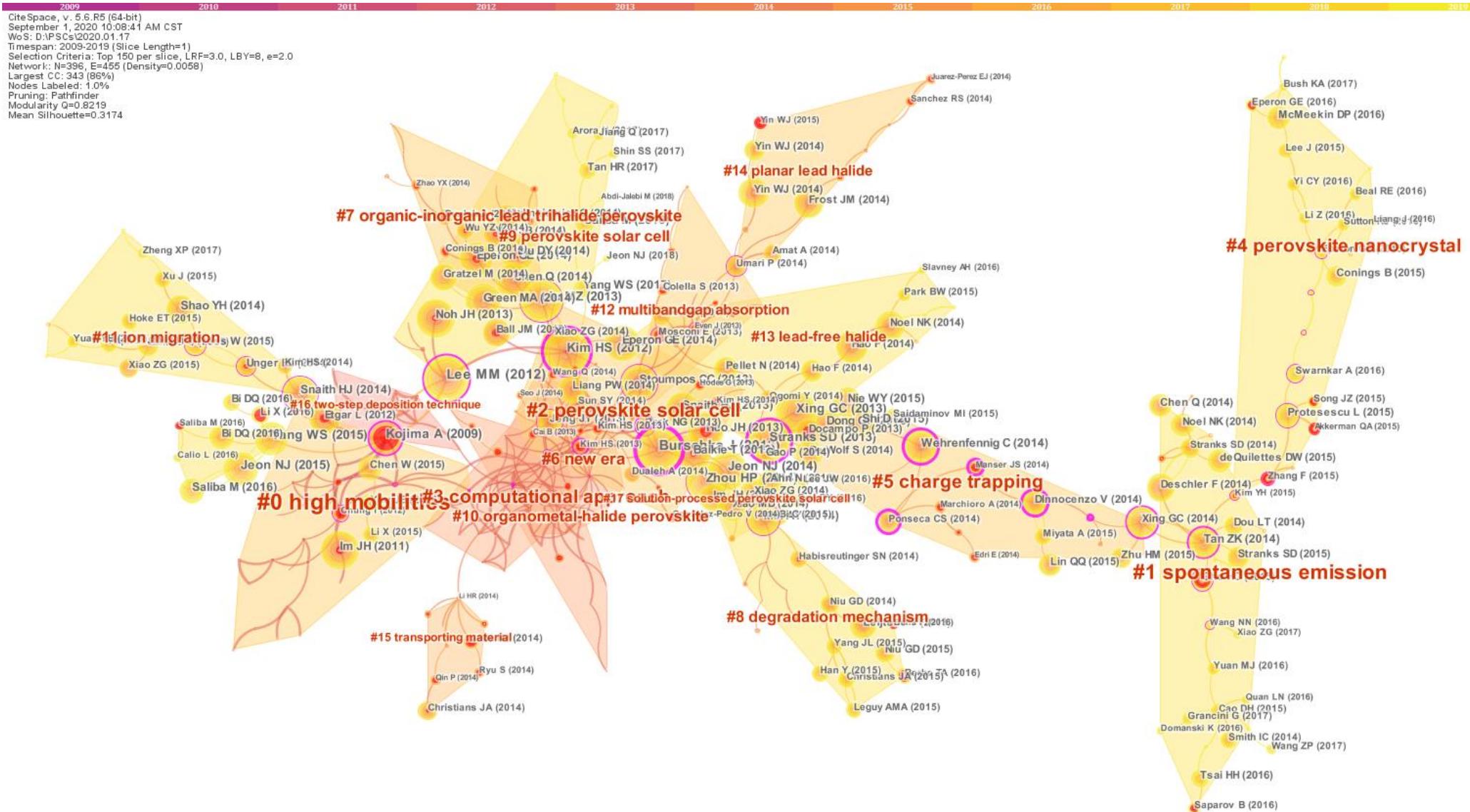


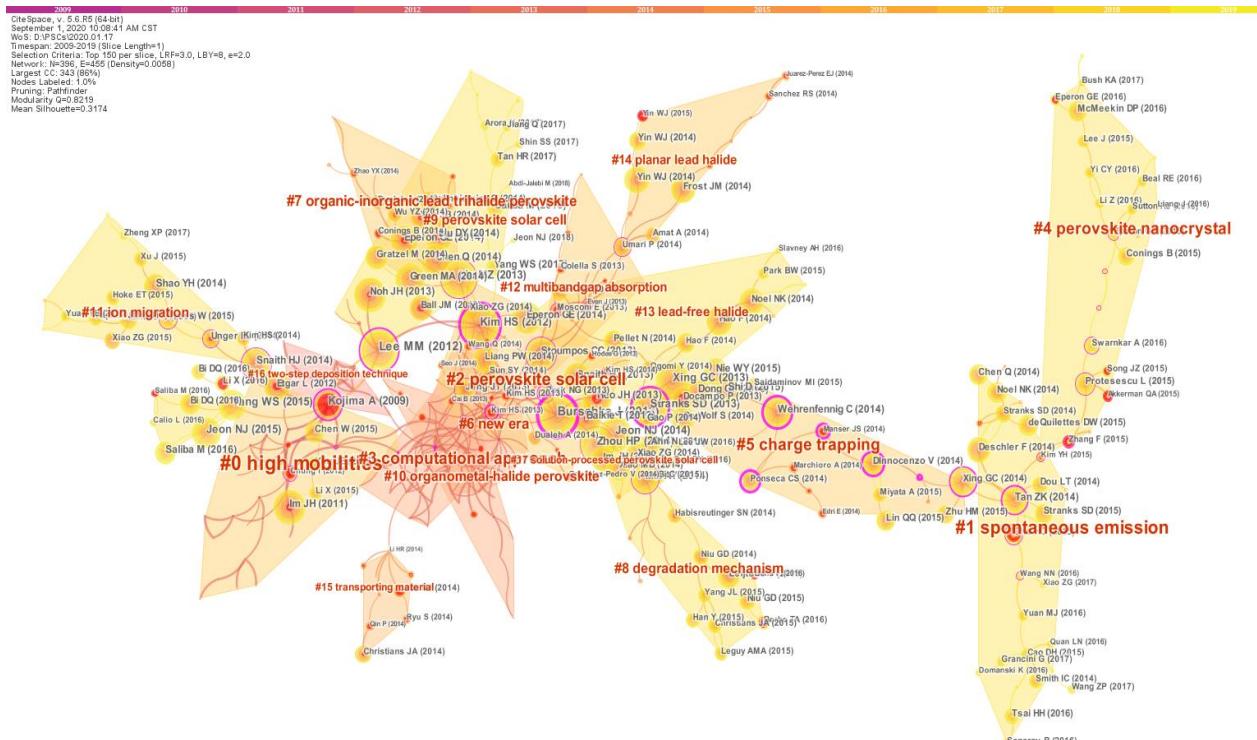
- Citation tree-rings : 引文年轮—代表着某篇文章的引文历史。引文年轮的颜色与时间切片的颜色相对应，一个年轮厚度和与相应时间分区内引文数量成正比。
- 共引线的颜色与首次发生共引的时间切片的颜色相对应





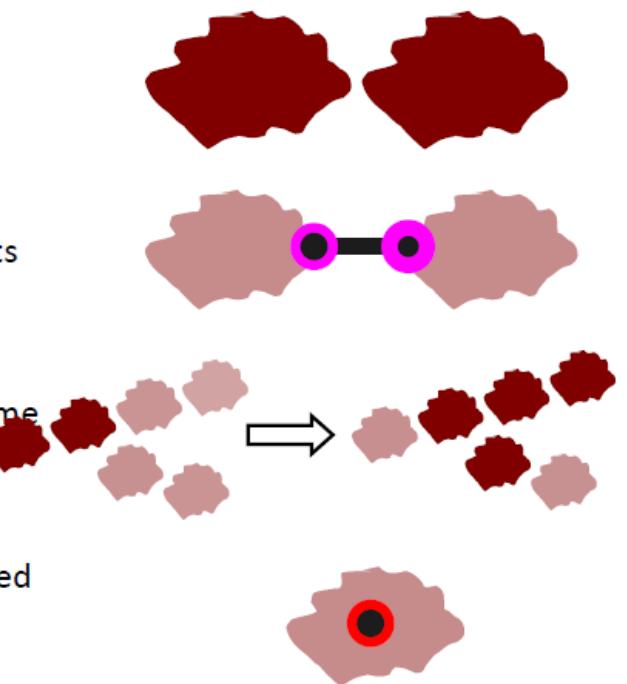
Term	Description
Co-citation network	<ul style="list-style-type: none"> A knowledge network represents how frequently two references are cited by other articles simultaneously. For instance, if two references are cited by a third or different articles, there may be a stronger correlation between them (Chen et al., 2014, https://doi.org/10.1517/14712598.2014.920813; Small, 1973, https://doi.org/10.1002/asi.4630240406). Co-citation literature represents the knowledge foundation and development of the given field (Chen et al., 2010, https://doi.org/10.1002/asi.21309; Small, 1973, https://doi.org/10.1002/asi.4630240406).
Cluster	<ul style="list-style-type: none"> The synthesized network is divided into clusters of cited references. Thematic patterns of each cluster are identified based on noun phrases extracted from citing articles' titles and abstracts; then, the most representative noun phrases are further computed to identify the label of the cluster (Chen & Song, 2019, https://doi.org/10.1002/asi.4630240406).
Modularity Q	<ul style="list-style-type: none"> Modularity $Q > 0.3$ means that the separated social structures in the given field are clearly defined in terms of co-citation clusters (Chen, 2016, <i>CiteSpace: A Practical Guide for Mapping Scientific Literature</i>. Nova Science; Chen et al., 2010, https://doi.org/10.1002/asi.21309).
Silhouette	<ul style="list-style-type: none"> Silhouette > 0.5 means that the clustering effects are reasonable, and the level of homogeneity is relatively high, suggesting that each cluster is well matched with each other (Chen, 2016; Chen et al., 2010).
Log-likelihood ratio (LLR) tests	<ul style="list-style-type: none"> The LLR tests are considered to recognize labels effectively within the cluster; these labels are used to name clusters with better representativeness (Chen et al., 2010, 2012)
Size	<ul style="list-style-type: none"> Size denotes the number of cited references in each cluster. Clusters with few members tend to be less representative than larger ones, since small clusters are susceptible to the citing behavior of a small number of articles (Chen, 2012, https://doi.org/10.1517/14712598.2012.674507).
Betweenness centrality (BC)	<ul style="list-style-type: none"> BC value is commonly used as structural metric for qualifying the academic impact of one reference in citation networks (Li & Chen, 2016, <i>CiteSpace: Text mining and visualization in scientific literature</i> Capital University of Economics and Business Press.).
	<ul style="list-style-type: none"> Nodes with high BC (whose BC value > 0.1) tend to identify boundary spanning potentials that may lead to transformative discoveries (Chen, 2017, https://doi.org/10.1515/jdis-2017-0006; Chen et al., 2009, https://doi.org/10.1016/j.joi.2009.03.004; Schierz et al., 2010, https://doi.org/10.1016/j.joi.2009.03.004).
Citation Burstness (CB)	<ul style="list-style-type: none"> CB is a computational technique that has been used to identify references attracting increased attention to the underlying research and to trace the development of study focus (Chen, 2017; Kleinberg, 2003, https://doi.org/10.1515/jdis-2017-0006).
Sigma	<ul style="list-style-type: none"> The sigma score is a combinant metric of the BC and the citation burstness of the cited reference (Chen, 2017). A cited reference with high sigma score reflects its structural and temporal significance (Chen, 2017).





Expected Patterns

- Thematic grouping
- Intellectual turning points
- Thematic change over time
- Abrupt changes associated with triggers

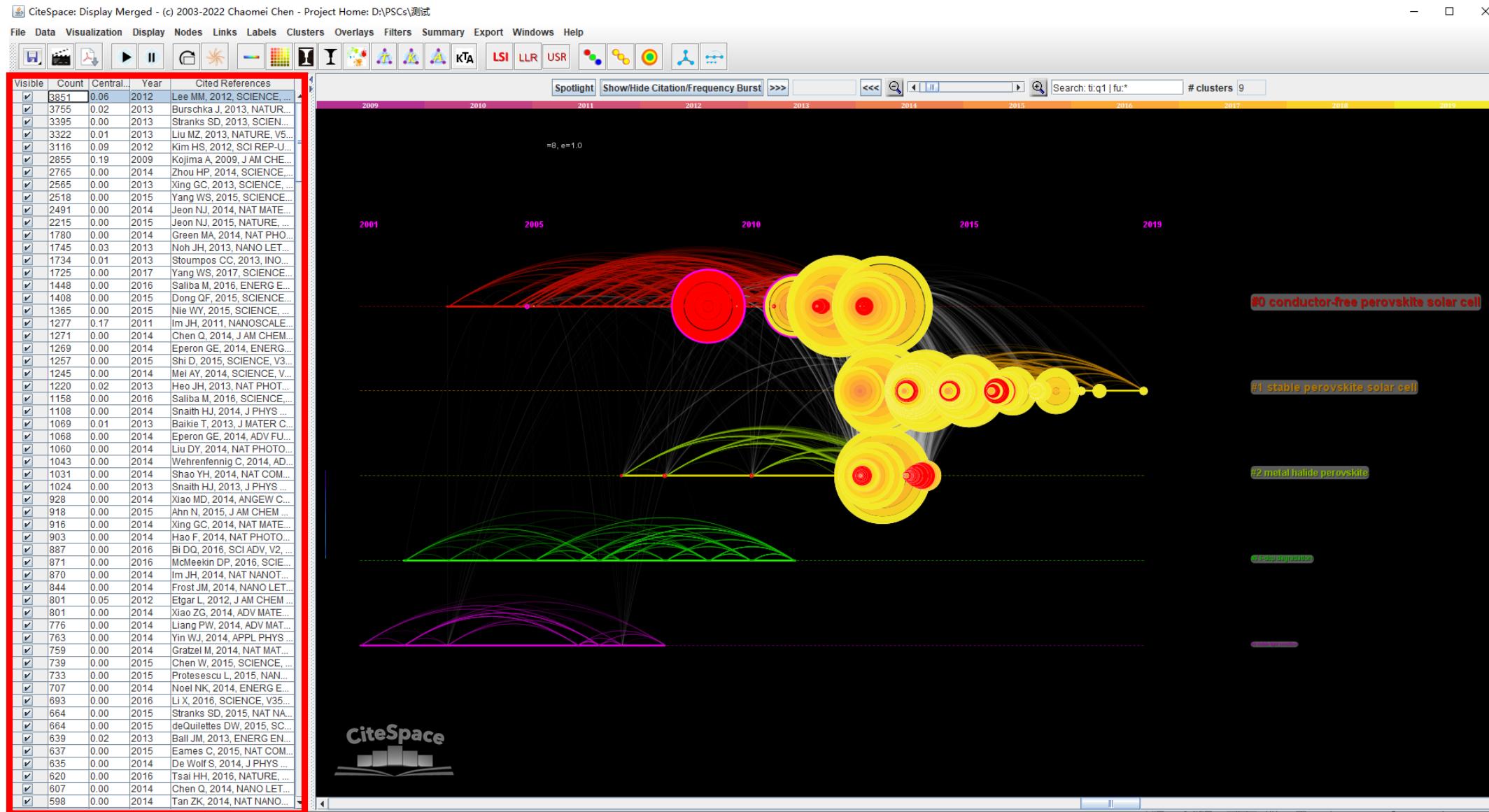


03

文献共被引分析

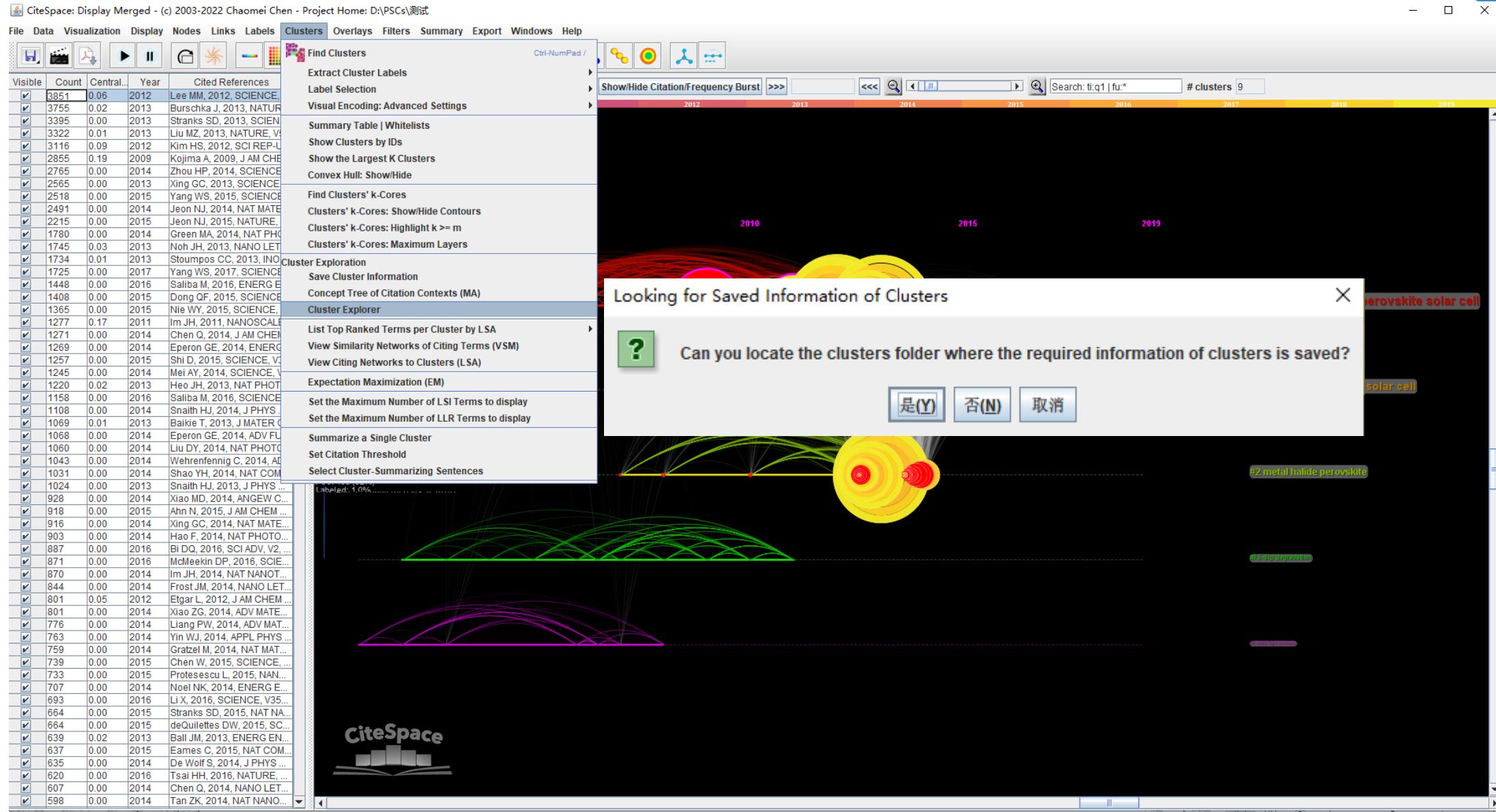


详细信息查询





详细信息查询





以下将对获得的三个重要的窗口进行解释

CiteSpace: Cluster Explorer

Select	Cluster ID	Size	Silhouette	mean(Year)	Top Terms (LSI)	Top Terms (log-likelihood ratio, p-level)	Terms (mutual information)
<input checked="" type="checkbox"/>	0	146	0.833	2009	perovskite solar cell; solar cell; efficient perovskite ...	conductor-free perovskite solar cell (7787.04, 1.0E-4); ...	5-dcp degradation (2.83); zinc stannate nanocu...
<input type="checkbox"/>	1	122	0.879	2015	perovskite solar cell; solar cell; perovskite film; ...	stable perovskite solar cell (13625.23, 1.0E-4); ...	5-dcp degradation (7.49); zinc stannate nanocu...
<input type="checkbox"/>	2	88	0.707	2013	perovskite solar cell; solar cell; efficient perovskite ...	metal halide perovskite (15494.19, 1.0E-4); stab...	5-dcp degradation (3.49); zinc stannate nanocu...
<input type="checkbox"/>	3	36	0.996	2007	zinc stannate nanocubes and nanorhombs with ...	5-dcp degradation (28.35, 1.0E-4); zinc stannate ...	perovskite solar cell (0.26); solar cell (0.05); per...
<input type="checkbox"/>	8	16	0.985	2005	organometal halide perovskites as visible-light ...	visible-light sensitizer (29.54, 1.0E-4); photovolt...	perovskite solar cell (0.26); solar cell (0.05); per...

Citing Articles | Keywords

Coverage	GCS	LCS	Bibliography													
81	413	0	Chen, Q (2015.0) Under the spotlight: the organic-inorganic hybrid halide perovskite for optoelectronic applications . NANO TODAY, V10, P42 DOI 10.1016/j.nantod.2015.04.009													
54	32	0	Chen, J (2019.0) Causes and solutions of recombination in perovskite solar cells . ADVANCED MATERIALS DOI 10.1002/adma.201803019													
54	709	0	Berhe, TA (2016.0) Organometal halide perovskite solar cells: degradation and stability . ENERGY & ENVIRONMENTAL SCIENCE DOI 10.1039/c5ee02733k													
53	501	0	Correa-baena, J (2017.0) The rapid evolution of highly efficient perovskite solar cells . ENERGY & ENVIRONMENTAL SCIENCE, V10, P18 DOI 10.1039/c6ee03397k													
52	54	0	Cui, J (2015.0) Recent progress in efficient hybrid lead halide perovskite solar cells . SCIENCE AND TECHNOLOGY OF ADVANCED MATERIALS DOI 10.1088/1468-6996/16/3/036004													
49	68	0	Brittman, S (2015.0) The expanding world of hybrid perovskites: materials properties and emerging applications . MRS COMMUNICATIONS DOI 10.1557/mrc.2015.6													
47	8	0	Ding, R (2017.0) Organometal trihalide perovskites with intriguing ferroelectric and piezoelectric properties . ADVANCED FUNCTIONAL MATERIALS DOI 10.1002/adfm.201702207													
46	28	0	Ahmed, MI (2015.0) Perovskite solar cells: potentials, challenges, and opportunities . INTERNATIONAL JOURNAL OF PHOTOENERGY DOI 10.1155/2015/592308													
44	296	0	Chen, B (2016.0) Origin of j-v hysteresis in perovskite solar cells . JOURNAL OF PHYSICAL CHEMISTRY LETTERS DOI 10.1021/acs.jpclett.6b00215													

Cited References | Keywords

Freq	Burst	BurstB...	BurstE...	Degree	Central.	Σ	PageR...	Label	Author	Year	Title	Source	Vol	Page	HalfLife	DOI	Cluster
1	0.00			29.00	1.00	0.00	Ma W (...)	Ma W...	2009	...	NANO ...	V9	P1699	2.5	10.102...	0	
2	0.00			22.00	1.00	0.00	Mishra...	Mishra A...	2009	...	ANGE...	V48	P2474	3.5	10.100...	0	
1	0.00			18.00	1.00	0.00	Rogac...	Rogac...	2007	...	J PHY...	V111	P14628	3.5	10.102...	0	
3	0.00			49.00	1.00	0.00	Kamat...	Kamat...	2008	...	J PHY...	V112	P18737	4.5	10.102...	0	
1	0.00			18.00	1.00	0.00	Lee YL...	Lee YL...	2009	...	ADV F...	V19	P604	1.5	10.100...	0	
3	0.00			29.00	1.00	0.00	Takan...	Takan...	2011	...	DALTO...	V40	P563	1.5	10.103...	0	
5	3.43	2011	2013	80.01	1.03	0.00	Ruhle ...	Ruhle S	2010	...	CHEM...	V11	P2290	2.5	10.100...	0	
2	0.00			35.00	1.00	0.00	Snalith...	Snalith...	2006	...	APPL...	V89	P0	6.5	10.106...	0	
7	4.81	2012	2013	87.01	1.03	0.00	Kojima...	Kojima...	2012	...	CHEM...	V41	P397	0.5	10.124...	0	
1	0.00			22.00	1.00	0.00	Jang S...	Jang SR	2011	...	ACS N...	V5	P8267	0.5	10.102...	0	
24	15.12	2012	2014	149.01	1.16	0.00	Im JH...	Im JH...	2012	...	NANO...	V7	P0	1.5	10.118...	0	
2	0.00			25.00	1.00	0.00	Kim M...	Kim MJ	2010	...	J PHY...	V114	P19849	1.5	10.102...	0	
801	81.15	2013	2015	282.05	54.21	0.00	Elgar L...	Elgar L...	2012	...	J AM C...	V134	P17396	3.5	10.102...	0	
1277	32.84	2012	2014	342.017	154.55	0.00	Im JH...	Im JH...	2011	...	NANO...	V3	P4088	4.5	10.103...	0	
1	0.00			18.00	1.00	0.00	Gonzal...	Gonzal...	2010	...	ACS N...	V4	P5783	0.5	10.102...	0	
2	0.00			35.00	1.00	0.00	Abrus...	Abrus...	2011	...	ADV F...	V21	P2571	1.5	10.100...	0	
1	0.00			29.00	1.00	0.00	Gao J...	Gao JB	2011	...	NANO...	V11	P3263	0.5	10.102...	0	
2	0.00			52.00	1.00	0.00	Im SH...	Im SH...	2011	...	ENER...	V4	P2799	1.5	10.103...	0	
3	0.00			38.00	1.00	0.00	Li G (2...	Li G	2012	...	NAT P...	V6	P153	0.5	10.103...	0	
2	0.00			29.00	1.00	0.00	Kamat...	Kamat...	2010	...	CHEM...	V110	P6664	2.5	10.102...	0	
2	0.00			29.00	1.00	0.00	Lin H...	Lin H...	2006	...	APPL...	V68	P1	5.5	10.101...	0	
1	0.00			29.00	1.00	0.00	Semo...	Semo...	2011	...	SCIEN...	V334	P1530	0.5	10.112...	0	
2	0.00			37.00	1.00	0.00	Park J...	Park J	2007	...	SOL E...	V91	P1749	4.5	10.101...	0	
2	0.00			17.00	1.00	0.00	Mashiy...	Mashiy...	2007	...	FERR...	V348	P584	5.5	10.108...	0	
639	119.25	2013	2015	246.002	6.11	0.00	Ball JM...	Ball JM	2013	...	ENER...	V6	P1739	1.5	10.103...	0	
159	78.38	2012	2015	244.005	52.08	0.00	Chung...	Chung I	2012	...	NATURE	V485	P486	1.5	10.103...	0	
4	0.00			29.00	1.00	0.00	Chen ...	Chen Z	2012	...	J LUMIN	V132	P345	0.5	10.101...	0	
2	0.00			25.00	1.00	0.00	Papav...	Papav...	2012	...	J MATE...	V22	P8271	0.5	10.103...	0	

Summary Sentences

Representative Sentences

Selection method:

- Centrality
- PageRank
- select from Abstracts

Start

Clusters processed: 0 of 9

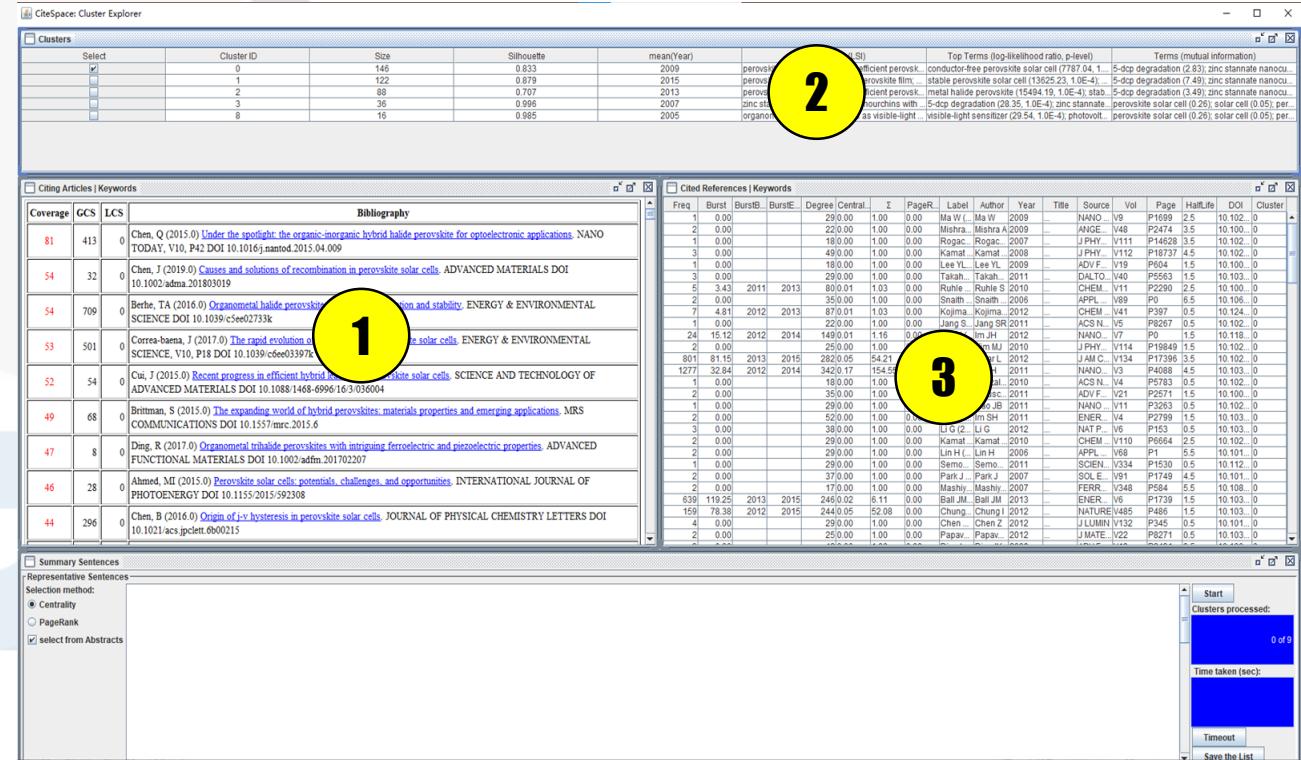
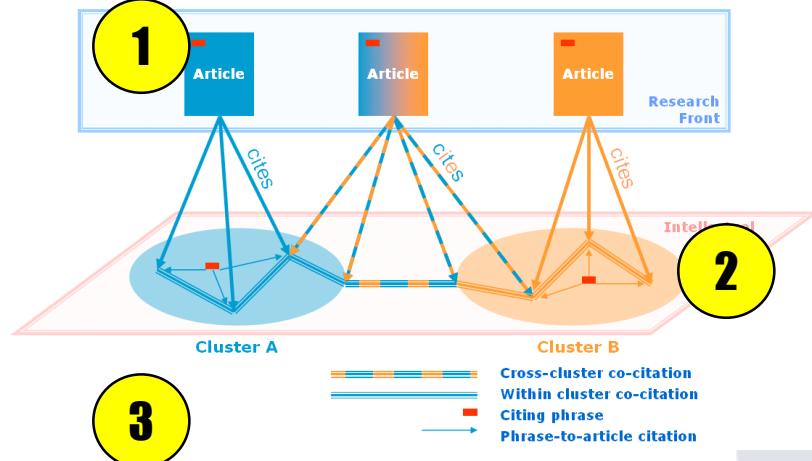
Time taken (sec):

Timeout

Save the List



CiteSpace概念模型与软件提供的信息查询比较



文献共被引分析



该窗口显示的是通过三种方法得到的聚类命名（反映研究领域涵盖的主题）

CiteSpace: Display Merged - (c) 2003-2022 Chaomei Chen - Project Home: D:\PSCs\测试

File Data Visualization Display Nodes Links Labels Clusters Overlays Filters Summary Export Windows Help

Find Clusters
Extract Cluster Labels
Label Selection
Visual Encoding: Advan...
Summary Table | Whitelis...

Show Clusters by IDs
Show the Largest K Clu...

Convex Hull: Show/Hide

Find Clusters' k-Cores
Clusters' k-Cores: Show...

Clusters' k-Cores: Highl...

Clusters' k-Cores: Maxi...

Cluster Exploration
Save Cluster Informatio...

Concept Tree of Citor...

Cluster Explorer

List Top Ranked Terms
View Similarity Network
View Citing Networks to...

Expectation Maximizati...

Set the Maximum Numbe...

Summarize a Single Clu...

Select Citation Threshold

Select Cluster-Summar...

Save/Show as HTML: cluster_summary.html

Save Label Terms as a Whitelist

Select	Cluster ID	Size	Silhouette	mean(Year)	Top Terms (LSI)	Top Terms (log-likeliho...	Terms (mutual informat...
<input type="checkbox"/>	0	146	0.833	2009	perovskite solar cell; so...	conductor-free perovski...	5-dcp degradation (2.8...
<input type="checkbox"/>	1	122	0.879	2015	perovskite solar cell; so...	stable perovskite solar ...	5-dcp degradation (7.4...
<input type="checkbox"/>	2	88	0.707	2013	perovskite solar cell; so...	metal halide perovskite ...	5-dcp degradation (3.4...
<input type="checkbox"/>	3	36	0.996	2007	zinc stannate nanocub...	5-dcp degradation (28....	perovskite solar cell (0...
<input type="checkbox"/>	8	16	0.985	2005	organometal halide per...	visible-light sensitizer (...	perovskite solar cell (0...

Alpha level: 3.0%

CiteSpace

该窗口信息还可以通过菜单“Cluster”，“Summary Table /Whitelists”得到

文献共被引分析



该窗口显示的施引文献（这些文献代表了研究前沿）。标题中着重标识的词汇正是通过相关方法提取的聚类命名

Coverage	GCS	LCS	Bibliography
81	413	0	Chen, Q (2015.0) Under the spotlight: the organic-inorganic hybrid halide perovskite for optoelectronic applications . NANO TODAY, V10, P42 DOI 10.1016/j.nantod.2015.04.009
54	32	0	Chen, J (2019.0) Causes and solutions of recombination in perovskite solar cells . ADVANCED MATERIALS DOI 10.1002/adma.201803019
54	709	0	Berhe, TA (2016.0) Organometal halide perovskite solar cells: degradation and stability . ENERGY & ENVIRONMENTAL SCIENCE DOI 10.1039/c5ee02733k
53	501	0	Correa-baena, J (2017.0) The rapid evolution of highly efficient perovskite solar cells . ENERGY & ENVIRONMENTAL SCIENCE, V10, P18 DOI 10.1039/c6ee03397k
52	54	0	Cui, J (2015.0) Recent progress in efficient hybrid lead halide perovskite solar cells . SCIENCE AND TECHNOLOGY OF ADVANCED MATERIALS DOI 10.1088/1468-6996/16/3/036004
49	68	0	Brittman, S (2015.0) The expanding world of hybrid perovskites: materials properties and emerging applications . MRS COMMUNICATIONS DOI 10.1557/mrc.2015.6
47	8	0	Ding, R (2017.0) Organometal trihalide perovskites with intriguing ferroelectric and piezoelectric properties . ADVANCED FUNCTIONAL MATERIALS DOI 10.1002/adfm.201702207
46	28	0	Ahmed, MI (2015.0) Perovskite solar cells: potentials, challenges, and opportunities . INTERNATIONAL JOURNAL OF PHOTOCHEMISTRY DOI 10.1155/2015/592308
44	296	0	Chen, B (2016.0) Origin of j-v hysteresis in perovskite solar cells . JOURNAL OF PHYSICAL CHEMISTRY LETTERS DOI 10.1021/acs.jpclett.6b00215

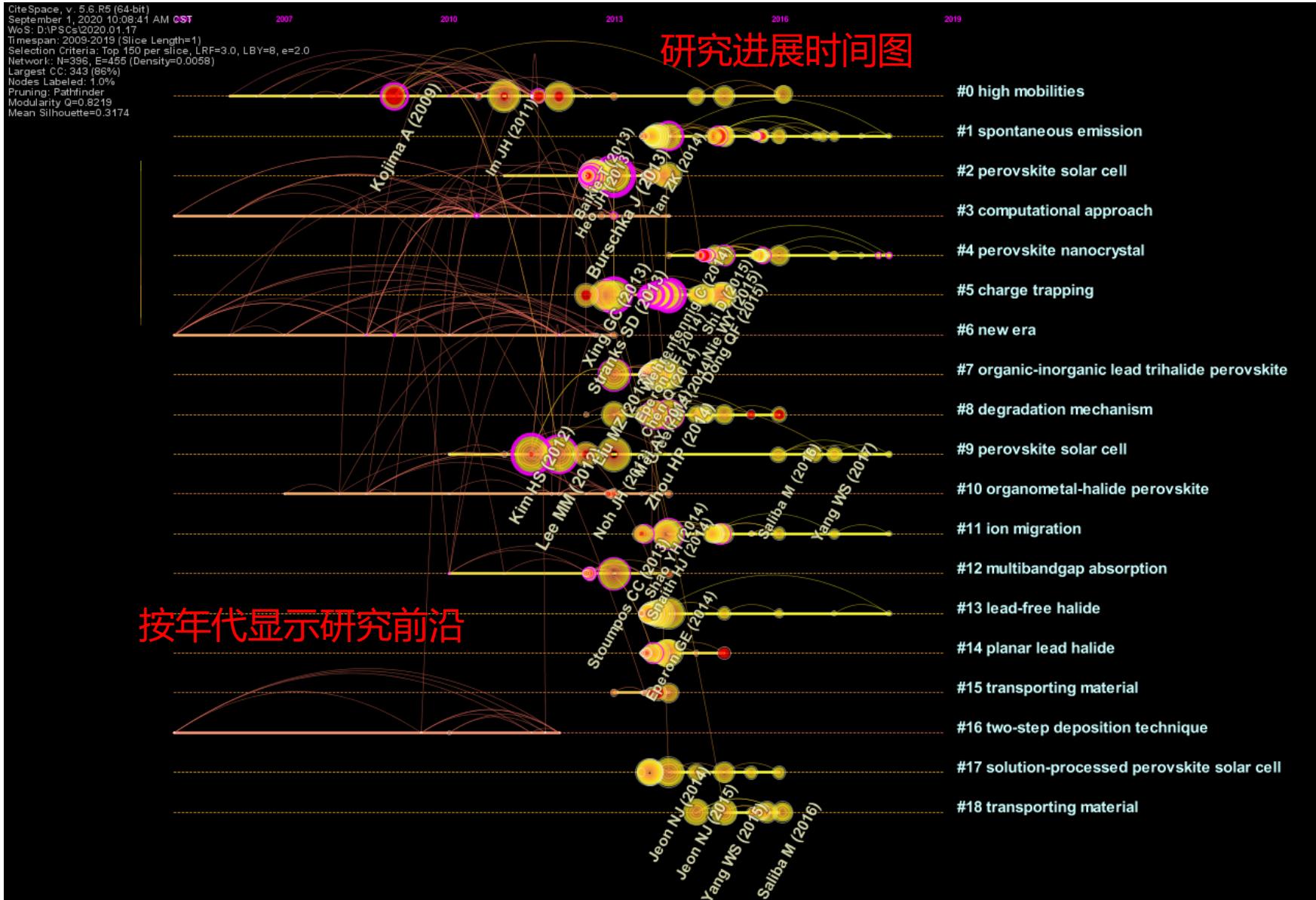


该窗口显示的是被引文献（反映的是知识基础），这些文献也是直接在图谱中显示的节点信息

Cited References Keywords																	
Freq	Burst	BurstB...	BurstE...	Degree	Central...	Σ	PageR...	Label	Author	Year	Title	Source	Vol	Page	HalfLife	DOI	Cluster
1	0.00			29	0.00	1.00	0.00	Ma W (...)	Ma W	2009	...	NANO ...	V9	P1699	2.5	10.102...	0
2	0.00			22	0.00	1.00	0.00	Mishra...	Mishra A	2009	...	ANGE...	V48	P2474	3.5	10.100...	0
1	0.00			18	0.00	1.00	0.00	Rogac...	Rogac...	2007	...	J PHY...	V111	P14628	3.5	10.102...	0
3	0.00			49	0.00	1.00	0.00	Kamat ...	Kamat ...	2008	...	J PHY...	V112	P18737	4.5	10.102...	0
1	0.00			18	0.00	1.00	0.00	Lee YL...	Lee YL	2009	...	ADV F...	V19	P604	1.5	10.100...	0
3	0.00			29	0.00	1.00	0.00	Takah...	Takah...	2011	...	DALTO...	V40	P5563	1.5	10.103...	0
5	3.43	2011	2013	80	0.01	1.03	0.00	Ruhle ...	Ruhle S	2010	...	CHEM...	V11	P2290	2.5	10.100...	0
2	0.00			35	0.00	1.00	0.00	Snaith ...	Snaith ...	2006	...	APPL ...	V89	P0	6.5	10.106...	0
7	4.81	2012	2013	87	0.01	1.03	0.00	Kojima...	Kojima...	2012	...	CHEM ...	V41	P397	0.5	10.124...	0
1	0.00			22	0.00	1.00	0.00	Jang S...	Jang SR	2011	...	ACS N...	V5	P8267	0.5	10.102...	0
24	15.12	2012	2014	149	0.01	1.16	0.00	Im JH (...)	Im JH	2012	...	NANO...	V7	P0	1.5	10.118...	0
2	0.00			25	0.00	1.00	0.00	Kim M...	Kim MJ	2010	...	J PHY...	V114	P19849	1.5	10.102...	0
801	81.15	2013	2015	282	0.05	54.21	0.00	Etgar L...	Etgar L	2012	...	J AM C...	V134	P17396	3.5	10.102...	0
1277	32.84	2012	2014	342	0.17	154.55	0.00	Im JH (...)	Im JH	2011	...	NANO...	V3	P4088	4.5	10.103...	0
1	0.00			18	0.00	1.00	0.00	Gonzal...	Gonzal...	2010	...	ACS N...	V4	P5783	0.5	10.102...	0
2	0.00			35	0.00	1.00	0.00	Abrusc...	Abrusc...	2011	...	ADV F...	V21	P2571	1.5	10.100...	0
1	0.00			29	0.00	1.00	0.00	Gao J...	Gao JB	2011	...	NANO ...	V11	P3263	0.5	10.102...	0
2	0.00			52	0.00	1.00	0.00	Im SH ...	Im SH	2011	...	ENER...	V4	P2799	1.5	10.103...	0
3	0.00			38	0.00	1.00	0.00	Li G (2...)	Li G	2012	...	NAT P...	V6	P153	0.5	10.103...	0
2	0.00			29	0.00	1.00	0.00	Kamat ...	Kamat ...	2010	...	CHEM ...	V110	P6664	2.5	10.102...	0
2	0.00			29	0.00	1.00	0.00	Lin H (...)	Lin H	2006	...	APPL ...	V68	P1	5.5	10.101...	0
1	0.00			29	0.00	1.00	0.00	Semo...	Semo...	2011	...	SCIEN...	V334	P1530	0.5	10.112...	0
2	0.00			37	0.00	1.00	0.00	Park J ...	Park J	2007	...	SOL E...	V91	P1749	4.5	10.101...	0
2	0.00			17	0.00	1.00	0.00	Mashiy...	Mashiy...	2007	...	FERR...	V348	P584	5.5	10.108...	0
639	119.25	2013	2015	246	0.02	6.11	0.00	Ball JM...	Ball JM	2013	...	ENER...	V6	P1739	1.5	10.103...	0
159	78.38	2012	2015	244	0.05	52.08	0.00	Chung...	Chung I	2012	...	NATURE	V485	P486	1.5	10.103...	0
4	0.00			29	0.00	1.00	0.00	Chen ...	Chen Z	2012	...	J LUMIN	V132	P345	0.5	10.101...	0
2	0.00			25	0.00	1.00	0.00	Papav...	Papav...	2012	...	J MATE...	V22	P8271	0.5	10.103...	0



Timeline 呈现方式





引用突变文献信息

File Metrics View Layout Display Network Over

Citation/Frequency Burst History

Visible	Freq	Cent..	Year	Cited References
<input checked="" type="checkbox"/>	460	0.00	2002	PIERRE AC, 2002, CHE...
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<input checked="" type="checkbox"/>	227	0.00	1931	KISTLER SS, 1931, NAT...
<input checked="" type="checkbox"/>	223	0.00	2003	AL-MUHTASEB SA, 200...
<input checked="" type="checkbox"/>	220	0.00	1985	SING KSW, 1985, PURE...
<input checked="" type="checkbox"/>	205	0.00	2010	XU YX, 2010, ACS NAN...
<input checked="" type="checkbox"/>	197	0.00	1938	BRUNAUER S, 1938, J ...

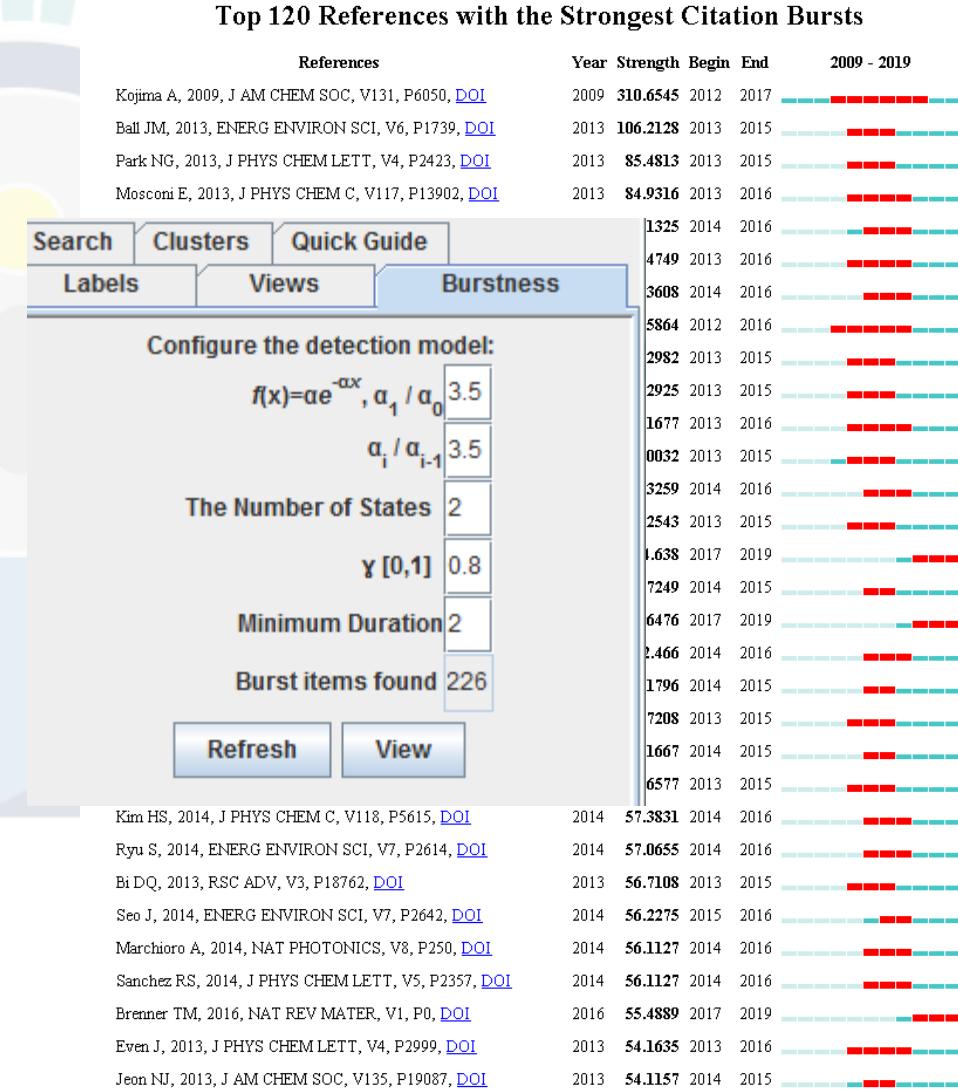
↓

Input

421 References have citation bursts.
Enter how many References to be included (1...421):

50

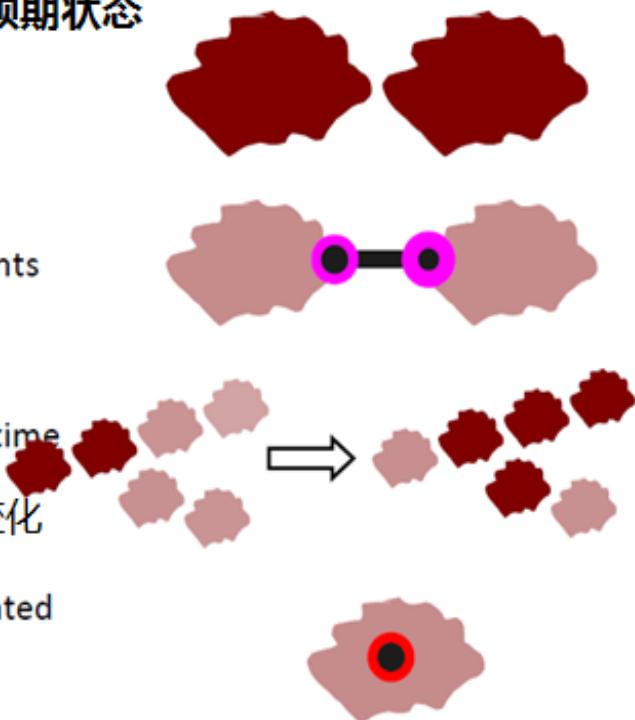
OK Cancel



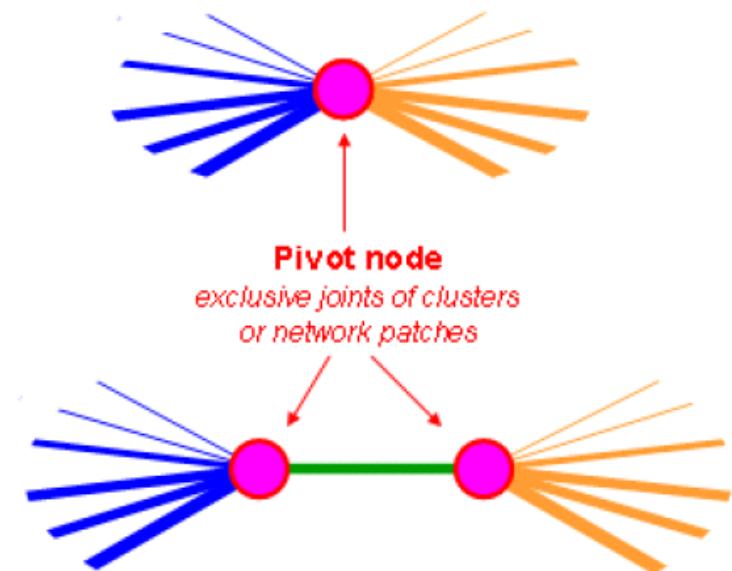
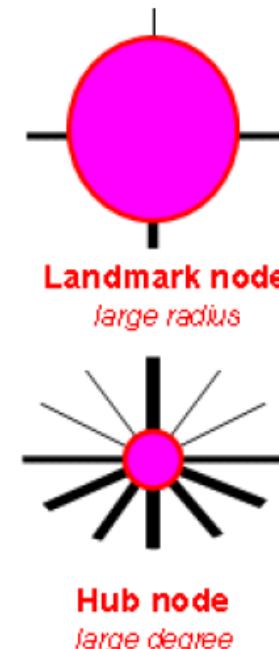


Expected Patterns 预期状态

- Thematic grouping
主题分组
- Intellectual turning points
转折点
- Thematic change over time
主题随着时间的推移变化
- Abrupt changes associated with triggers
触发性的研究突变



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6

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